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INDIA RUBBER WORLD

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Silenced Trolley Cars[1]

Noise and High-Frequency Vibrations Eliminated by Scientific Application of Rubber Suspensions

TROLLEY-CAR design has lagged years behind the modern practice of using rubber to reduce high frequency vibrations and noise of operation. This fact accounts largely for the preference of the public for busses over trolleys in city transportation. Many engineering attempts to improve riding conditions of street and railway cars have brought forth various systems of silent wheels and modes of rubber suspension of various degrees of practical utility.

A practical solution of this problem has been reached in trolley-car construction by redesigning completely the wheels, trucks, power application, and braking mechanisms on the basis of experimentally evaluated factors and on the principle of either eliminating vibration and noise at the source or minimizing the degree of their spreading from that source. The remarkable success of this solution seems definitely to open a new and important field for the rubber manufacturing industry. The rubber composition required for silencing a single trolley car weighs from 350 to 450 pounds.

Experimental and analytical study of the problem shows that vibrations outside the audible range as well as vibrations within that range originate principally at the following points: 1. the more or less rough contact of wheel and rail head; 2. rail joints and other major irregularities in the track such as at crossovers and switches; 3. in the gearing by which motor speed is reduced to axle speed; 4. in clearances at points of metal to metal contact within the truck structure, numerous and unavoidable.

In conventional types of construction all such vibrations not only set the surrounding air in vibration, thus causing audible or inaudible atmospheric oscillations, but they also travel through the truck structure and into the car body by direct metallic paths. As a result of this latter action, large parts of the truck and particularly the floor, walls, and roof of the car are made to act as sounding boards to broadcast noises produced in other parts of the assemblage. Suppression of high-frequency vibrations and noise has been accomplished in the redesign under discussion by the use of cushion wheels, the subdivision of the truck structure into units separated from each other by rubber, and by the interposition of very effective rubber damping between truck and car body.

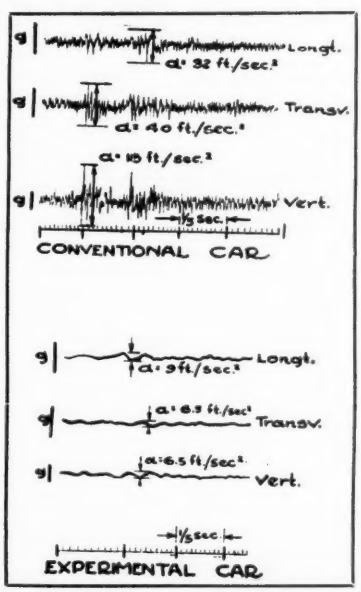


Fig. 1. Front King Pin Reactions

The cushion wheels serve to minimize the amount of vibration produced at the wheel-rail contact and to introduce other desirable characteristics referred to below. In these wheels the tire member is separated from the hub and disk of the wheel by rubber which carries the car weight in shear and is therefore a very effective springing as well as vibration damping device.

In the truck structure no metal parts which have relative movement, other than well-lubricated bearings, make metal to metal contact. At each such point the metal parts are separated by rubber used in such a way that it serves both as an effective spring and as a vibration absorber. In fact, in the experimental models that have been under test for about 8 months the entire spring system of the truck was built

[1] Data from C. F. Hirshfeld, Chief Engineer, Electric Railway Presidents Conference Committee.

of rubber instead of the conventional steel springs.

All the rubber used in the silenced trolley acts in shear with respect to the principal forces to be transmitted. It is molded into disks or plates as required for the specific application, and like parts are interchangeable throughout. The rubber is of high quality composition and varies from a durometer of 35 to a durometer of 70, depending upon the location in the truck, the load to be transmitted, the degree of deflection desired, etc. In some cases the rubber has been vulcanized to metal, and in others normal pressure between metal and rubber has been used to produce the necessary adhesion.

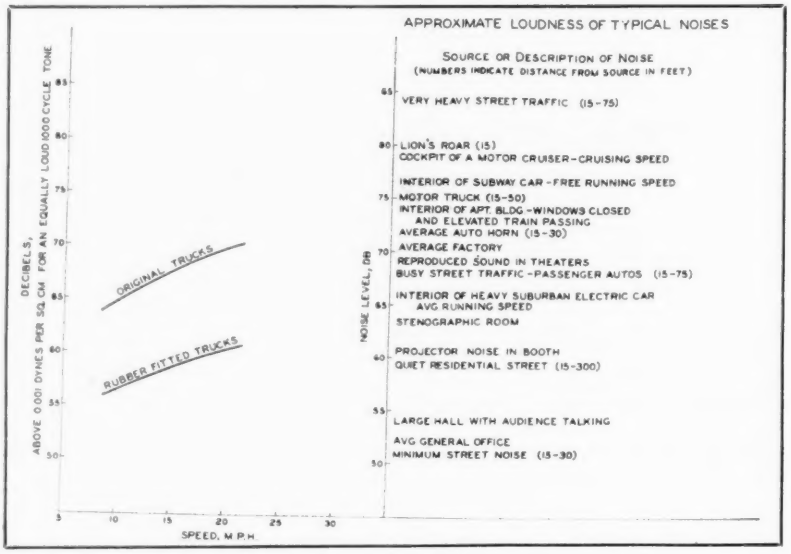


Fig. 2. Showing the Results of Noise Reduction

The use of rubber cushioned wheels serves to reduce what is known as the completely unsprung weight of the vehicle, that is, the weight of those parts between the track and the nearest set of springs. The reduction of unsprung weight has many desirable effects, but one of the most important is the reduction of the magnitude of the impacts between wheel and rail. These may be described as hammer blows made by the wheel upon the rail. In the case of conventional street car construction the weight of the "hammer" striking such blows is of the order of 700 to 1,200 pounds; whereas with the redesigned car this weight is reduced to the order of 100 to 200 pounds, depending upon the details of wheel design. The rate of destruction of track under the continued pounding of the wheels is greatly lessened by this reduction in the value of unsprung weight.

The rubber cushioned wheel also acts advantageously in another respect in that it reduces greatly the magnitude of the destructive forces to which the parts of the truck are subjected as a result of track irregularities. Experiment shows that the magnitude of such forces is reduced to 1/3 to 1/12 those characteristic of the conventional car; the wide range is due to variations in track conditions and truck designs.

The effectiveness with which the rubber parts of the construction combine to eliminate high-frequency vibrations from the car body is shown by the graphs of Figure 1. The upper 3 sharply serrated graphs are records of the vibrations of the floor of a conventional street car, the instrument having been located immediately above the center of the leading truck. The vibrations are recorded in terms of acceleration to a scale of g equal to 32.2 ft./sec.^{2}. They may be considered as indicating the record of the forces to which the car floor and passengers on that car floor are subjected.

The 3 lower graphs were obtained with the same instrument used in the same way in a car mounted on rubber equipped trucks when running on the same track. The softly undulating characteristic of the record is in marked contrast to that obtained with the conventional car.

In each group of 3 graphs the lowest one is the record of vertical vibration. At the point indicated in each record the car passed over a particularly bad rail joint. The numbers, 115 and 6.5, are representative of the degree of disturbance experienced in the respective car bodies. Whereas the passenger in the conventional car can distinguish a most unpleasant vibration of the floor, which also has its effect on walls and roof, the passenger in the experimental equipment is entirely free from such sensations.

The results with respect to noise reduction are shown in Figure 2. The 2 graphs represent noise level within the car. The upper graph is a record of the noise level measured within a given car body when mounted on its original trucks; the lower graph was obtained with the same car body mounted on the rubber fitted trucks. As a matter of fact, the original trucks were so designed and built as to be much quieter than those generally used so that the improvement shown for the rubber fitted trucks may be regarded as conservative. The tabulation of noise levels to the right of the illustration will enable the reader to evaluate the degree of noise reduction in terms with which he is more or less familiar.

Similar tests have been made of noise level outside the car. This is important because the very annoying noise now produced by street cars and audible in homes and offices is one of the things that causes the public to believe the street car an antiquated and objectionable type of vehicle. The results obtained are just as striking as those shown in Figure 2. In fact, the car wheels and trucks make so little noise that an individual on the street hears practically nothing but the trolley.

Now that the possibility of obtaining such results as are here described has been proved experimentally, the organization responsible for this development is arranging to put one or more of these modernized cars in regular revenue service. In this way any weaknesses not discovered in the experimental work will be uncovered so that in the end cars of this sort and of proved design can be made available to the operating companies. It would, of course, be more than visionary to assume that the street railways of the country could immediately throw away all existing rolling stock and substitute for it cars built according to these new designs. Such a course would be, obviously, economically impossible. Therefore it is encouraging to learn that many of the principles developed in this work can be applied in modified form to existing equipment if and when money can be obtained for such purposes. It is hoped that in this way many of the very desirable results achieved with the experimental equipment can be obtained to a worthwhile degree in a practical and economically possible way.

Coloring Rubber

Joseph Rossman, Ph.D.

THE following abstracts continue the interesting and informative review of United States patents relating to the coloring of rubber, begun in our October 1, 1933, issue.

18. Willis, 1,701,220, Feb. 5, 1929. The invention comprises coloring a rubber base stock and separably coloring the fibrous, pulpous, granular, or other filling material, then adding and incorporating the filling material into the base stock.

In carrying out the invention a quantity of material such as cotton, wool, hair, jute, wood, fiber, sawdust, ground or granulated cork, vegetable fiber, paper, leather, clay, chalk, or any pulpous, fibrous, or absorbent material is dyed with an acid or other suitable dye. The binding material is made plastic in a mill. To this mass is added a dry color thoroughly incorporated into the base stock by milling. The resultant product is then sheeted or molded, as desired, and vulcanized. As a particular example the following ingredients are compounded:

	%
Smoked sheet rubber	19
Pure gum inner tube reclaimed rubber	17½
Zinc oxide	4
Lithopone	8
Lime	1¼
Cotton seed oil	3
Sulphur	1¼
Diphenyl-guanidine	½
Bombay red coloring pigment	½

This is thoroughly milled until the red coloring pigment is mixed with the compound. The dry dyed fibrous material is introduced into the mill and thoroughly mixed with the base stock to provide 40% of the composite product. After the fibrous material has been thoroughly mixed with the base stock, the resultant mass is sheeted, molded, or otherwise prepared for vulcanization. The surface of skin may be removed to expose the colored or dyed hair or other filler, resulting in an exceedingly attractive product of uniform color. The surface skin may be ground or abraded by a wire brush.

19. Gibson, 1,720,594, July 9, 1929. Reissue 18,910. Aug. 1, 1933. The process of coloring articles formed of thin sheet rubber comprises haphazardly bundling the articles to cause the bundles to make irregular contact with each other, introducing the bundles into a rubber coloring material, withdrawing them from the coloring material, and drying the articles. For further details see INDIA RUBBER WORLD, Oct. 1, 1929, page 61.

20. Croakman, 1,742,757, Jan. 7, 1930. This process of coloring rubber comprises incorporating a triarylmethane dye base and an aromatic nitro body with a rubber mix and vulcanizing the mixture under heat. Example: To a rubber mix consisting of

	Parts by Weight
Pale crepe	100
Zinc oxide	10
Sulphur	4
Diphenyl-guanidine	¾

are incorporated on the mixing mill ½-part of Victoria blue B base (i.e. tetramethylphenyl-triamino-diphenyl-alpha-naphthyl-carbinol) and ½-part of 2.4-dinitrophenol. The mixture is vulcanized either in open steam or in a mold for an hour at 40 pounds' steam pressure (about 141° C.). The vulcanized product is of a bright green-blue shade fast to light. It differs only slightly in shade and strength of color from the uncured material.

The vulcanization of a rubber mix of the same composition with the addition of ½-part of Victoria blue B base, but with no dinitrophenol, gives a vulcanized light brown product.

21. Klein, 1,750,177, Mar. 11, 1930. The process consists in adding to latex organic dyes, the ultramicrons of which exhibit a negative charge in the state of hydrosol and extracting, by centrifuging from the latex the excess of dye not having been adsorbed by the rubber particles and thereupon precipitating the rubber from the purified latex by electrophoresis.

22. Malone, 1,765,597, June 24, 1930. The following ingredients are used to produce a red hard rubber product:

	%
Smoked sheet rubber	26.50
Sulphur	8.00
Vermilion	49.25
Cotton seed oil	1.50
Lithopone	12.00
India rubber yellow	2.75

23. Crockett, 1,773,724, Aug. 26, 1930. The process of producing a variated surface effect on a rubber article consists in making a deposit of aqueous rubber containing material with an incorporated high percentage of mineral filler, drying at temperatures above 150° F. to produce checks or cracks in a variated fashion over the surface, further depositing aqueous rubber having material of a different color, and drying.

24. Witten, 1,774,781, Sept. 2, 1930. The method of coloring rubber articles to produce marbled or variegated striped color effects comprises floating layers of transparent rubber solution and of colored rubber solution on a bath, immersing a rubber article in the bath through the level of the layers, causing the color layer to adhere to the article, and the transparent layer to coat the article over the color layer during the downward dip, and removing and vulcanizing the article.

25. Clifford, 1,792,277, Feb. 10, 1931. The process consists of durably uniting coloring pigment to a rubber compound coated fibrous fabric by applying a non-oil-containing mixture of the pigment, nitrocellulose, and a solvent component containing amyl acetate and a blending ingredient for rubber, to the coated face of the fabric.

26. Crockett, 1,795,075, Mar. 3, 1931. This patent describes a process of making rubber footwear, which consists in dipping a last into an aqueous rubber containing material of one color to obtain a coating by deposit of the material on the last, dipping the coated last into an aqueous rubber containing material of another color to secure an exterior coating of different color from the interior and homogeneously merged therewith, and selectively dipping the sole portion into an aqueous rubber containing material of still another color and having fillers incorporated therewith for increasing the wear resistance of the sole.

27. Krech, 1,796,656, Mar. 17, 1931. The process of producing vulcanized colored rubber goods comprises incorporating with the rubber prior to vulcanization an insoluble metal salt of an acid anthraquinone dyestuff containing at least one amino group and then vulcanizing the rubber. The following example illustrates this invention: 90 parts of a rubber mixture containing in 100 parts 74 parts of light-colored crude rubber, 2.5 parts of sulphur, 2.2 parts of an accelerator, 13 parts of zinc white, and 8.3 parts of lithopone are mixed with 10 parts of a color lake made as follows: 15 parts of sodium 1-amino-4-phenylamino-anthraquinone-2-sulphonate, which may be obtained by condensing 1-amino-4-bromo-anthraquinone-2-sulphonic acid and p-toluidine according to U. S. Patent No. 1,131,516, are dissolved in 300 parts of water at the ordinary temperature; the solution is heated and then precipitated by adding 35 parts of a solution of barium chloride of 10% strength. The precipitate is filtered, washed, dried at 50° C., and powdered. The blue color withstands vulcanization when the mixture is worked up on the hot mixing rollers, and the thin rolled sheets are embedded in talc and treated with steam at 3 atmospheres' pressure for 70 minutes.

Another suitable metal salt of the dyestuff, particularly calcium salt, may be substituted for the barium salt in this example.

As further examples of suitable dyestuffs may be named alizarin direct violet R (Schultz, "Farbstofftabellen," 6th ed., 1923, No. 852, Color Index No. 1,074), alizarin cyanine green G (Schultz, No. 865 equal to alizarin brilliant green G Color Index No. 1,079) 1-amino-4-para-acetylaminophenylamino-anthraquinone-2-sulphonic acid (U. S. Patent No. 1,131,516).

28. Steinle, 1,802,740, Apr. 28, 1931. This process of treating rubber comprises dissolving a dye capable of diffusing into rubber in a liquid vulcanizing ingredient having the same property, dispersing the solution in a liquid which does not soften rubber, contacting a rubber composition with the dispersion whereby the dye and vulcanizing ingredient are diffused into the rubber composition, and vulcanizing.

29. Tochtermann, 1,823,921, Sept. 22, 1931. The process of coloring rubber comprises incorporating therewith prior to vulcanization a coloring matter in the form of an aqueous paste and a difficultly volatile organic substance. The following examples illustrate this invention. The parts are by weight.

Example 1: 25 parts of brilliant indigo 4G (Schultz, "Farbstofftabellen," 6th ed., No. 887) in the form of a 20% aqueous paste, to which 5 parts of propyl alcohol have been added, are rolled into a mixture of 100 parts of crepe rubber, 50 parts of heavy spar, 30 parts of lithopone, 12 parts of zinc white, 4 parts of flowers of sulphur, and 0.2-part of a vulcanization accelerator, by means of mixing rollers, while avoiding a strong increase in temperature. The whole is rolled until the small quantity of water which has not separated out has evaporated, and is then vulcanized for 30 minutes under a pressure of 3.5 atmospheres.

Instead of the aforesaid coloring matter, an aqueous paste of antimony pentasulphide may be used.

Example 2: 150 parts of a 28% aqueous paste of 6-chlor-3-amino-1-methylbenzol-4-sulphonic acid azo-beta-naphthol are mixed with 8 parts of Turkey red oil and rolled into 100 parts of crepe rubber. The resulting mixture is dried by hanging in the air overnight; 10 parts of the product are then rolled into the fundamental mixture described in Example 1, and the whole is then vulcanized as described in Example 1.

Instead of Turkey red oil as addition to the dyestuff paste, use may also be made of ethylene glycol monoethyl ether or of glycerol diacetate alone or in mixture with butyl alcohol.

30. Thorne, 1,832,514, Nov. 17, 1931. The method of producing color jazz-type patterns on articles subsequent to their formation from aqueous dispersions comprises forming a deposit on a surface from an aqueous dispersion thereon and then introducing the deposit into water containing on its surface irregular bodies of color.

31. Krech, 1,845,158, Feb. 16, 1932. This patent states that the production of clear violet, blue, and green dyeings on rubber has hitherto been difficult. The basic and acid dyestuffs of the triarylmethane series and the anthraquinone series, which because of their brilliancy particularly come into question here, are inapplicable because both the soluble dyestuffs and the lakes produced from them are destroyed in vulcanization. The following illustrates this invention. The parts are by weight.

Example 1: 85 parts of a rubber mixture containing in 100 parts 60 parts of crude rubber, 1.7 parts of sulphur, 0.6-part of an accelerator, 25 parts of lithopone, and 12.7 parts of chalk are mixed in a roller mixing machine, while warm, with 15 parts of a color lake obtained as follows: 1,016 cc. of a neutral suspension of aluminum hydroxide of 2% strength are mixed with a solution of 20 grams of patent blue A (Schultz, "Farbstofftabellen," 6th ed., 1923, No. 545, Color Index No. 714) in 40 cc. of water; 300 cc. of a solution of barium chloride of 10% strength are added, and the precipitate is filtered off by suction, washed, and dried. A hollow body formed from this colored mixture is vulcanized in the usual manner in the iron mold by application of steam at 2 atmospheres' pressure for 70 minutes. The vulcanized product is greenish blue.

Example 2: A rubber mixture as basis containing in 100 parts 74 parts of light colored crude rubber, 2.5 parts of sulphur, 2.2 parts of an accelerator, 13 parts of zinc white, and 8.3 parts of lithopone is mixed with a color lake prepared as described in Example 1, the proportion being 85 parts of the mixture to 15 parts of the lake; the mixture is worked upon the hot mixing rollers. The thin rolled sheet embedded in talc and treated with steam at 3 atmospheres' pressure for 70 minutes yields a blue vulcanized sheet.

32. Haertel, 1,836,660, Dec. 15, 1931. This method of making cured colored rubber products comprises placing the rubber in superimposed layers, the outer layer containing color, sulphur, and accelerator, and the remaining rubber containing sulphur, accelerator, and sufficient zinc oxide effectively to secure beneficial action of the accelerator in all layers during curing of the product.

As an example of one way of carrying out the process, a compound for a base layer may be prepared, by milling, consisting of:

	%
Pure rubber	40
Zinc oxide	12
Sulphur	½
Diphenyl-guanidine (accelerator)	½
Whiting	remainder

A layer of the above compound, about 1/32-inch thick, is applied to a textile sheet by a calendering machine; and while the rubber layer is hot and tacky, the surface may be wet by a "doctor" roll to apply thereto a film of solution consisting of a metal carbonate such as magnesium, zinc, silver, or lead carbonate, or other metal carbonate inert with respect to rubber, dissolved in ammonia water, which solution, when allowed to dry, will coat the rubber surface with a film of metal carbonate destroying its tackiness and permitting it to be rolled for

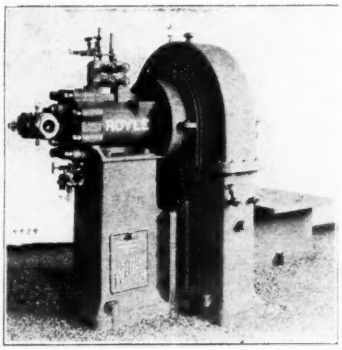
(*Continued on page* 34)

Rubber Machinery—IV

Tube, Ply, and Cover Machinery for Hose Construction

HOSE, belting, and packing comprise the main output of mechanical rubber goods factories. The many differing purposes for which these goods are used have given rise to numerous variations in quality and details of construction. These variations are especially numerous in hose, both for pressure and suction use, but more particularly, however, for hose handling fluids under pressure because that is the more widely applicable group.

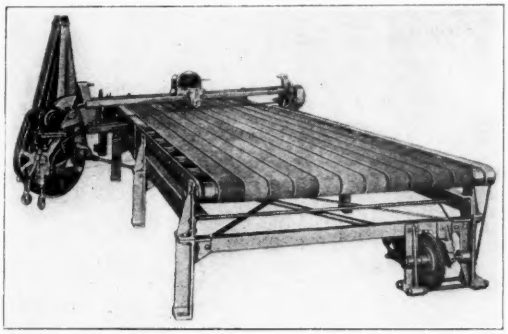
In trade lists hose is classified by the purposes for which it is designed by quality and construction. These uses include conducting liquids of all sorts as well as air, steam, and gases for industrial and agricultural purposes. Many of these applications are successful because of special developments in rubber working methods and machines. While most hose making machinery closely resembles the familiar forms of former years, it now is motorized and embodies automatic safety operating features and facilities for producing goods of highly consolidated, durable construction.



John Royle & Sons

Fig. 1. High-Speed Garden Hose Tuber

Rubber hose making was formerly wholly a hand operation for assembly of the tube, duck, and cover hand cut from the calendered materials. These parts are still assembled in part by hand labor in the case of extra large hose or in suction hose[1] necessitating special wire construction applied of necessity during making.



National Rubber Machinery Co.

Fig. 2. Bias Cutter

Pressure hose of the smaller diameters, particularly that for garden, spraying, and other purposes, is built in several ways designated as wrapped ply, braided ply, cord ply, circular woven, and knit. By any of these methods it is possible to construct pressure hose in any desired length. However vulcanization of hose in lengths exceeding 50 feet is limited to wrapped, braided, and cord ply constructions in diameters usually under one inch.

Hose Making Methods

The wrapped fabric ply method is applied generally in hose of small diameters[2], especially for garden and spray hose. The more flexible cotton braided construction is used extensively for molded garden hose and with steel wire in special small hose for extra-high-pressure lubrication service.

Spiraled cord ply is a new construction which is more rapid than braiding, and has recently been developed for garden hose.

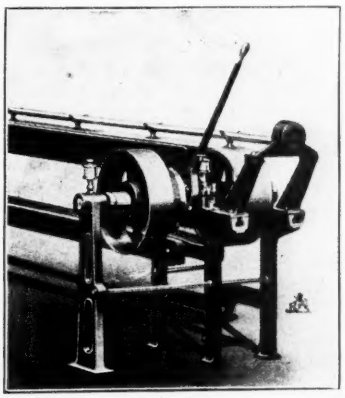
Circular woven, single and double jacket, rubber lined construction is the old-established method standard for fire hose.

Knitted-fabric exterior cover construction is used as a protection for gasoline delivery hose subject to abrasive wear at gasoline service stations.

Hose Tubes

All methods of hose making begin with the formation of the tube or rubber lining.[3] Handmade hose tubes are formed by uniting around a mandrel or hose pole the edges of a strip of calendered sheet rubber. It is the method for wrapped ply hose tubes too large to be extruded and also for suction hose. Tubes for pressure hose 3 inches or less in diameter can be extruded seamless by a tubing machine with speed and exactness of dimensions. Tubing thus produced is cut in 50-foot pieces for hose of standard lengths or in 500-foot pieces for lawn, garden, or spray hose to be of that length.

The first screw-forcing machine for extruding rubber in tubular and rod forms was introduced in American rubber practice in 1876.[4] It has since undergone much development in every feature and become indispensable equipment for rubber goods manufacturing.[5] These machines are built in many sizes and capacities fitted with appliances for straining stock, insulating wire, and delivering rubber in tubular or any other shape through a die.

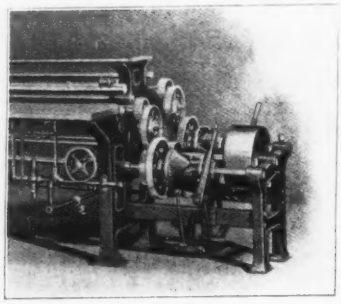


Farrel-Birmingham Co., Inc.

Fig. 3. Poling Machine

A modern tuber designed to run tubes for garden or other small-size hose is pictured in Figure 1. A special feature of this machine is the 2-part hinged construction head permitting it to be swung aside and to give easy access to its interior without breaking

[1] "Suction Hose," INDIA RUBBER WORLD, Apr. 1, 1932, pp. 51-52.
[2] "Garden and Spray Hose," INDIA RUBBER WORLD, June 1, 1931, pp. 59-60.
[3] "Hose Construction," INDIA RUBBER WORLD, May 1, 1931, pp. 53-54.
[4] "The First Screw-Forcing Machine," INDIA RUBBER WORLD, Jan. 1, 1919, p. 191.
[5] "Tubing Machine Versatility," INDIA RUBBER WORLD, Mar. 1, 1933, pp. 25-26.



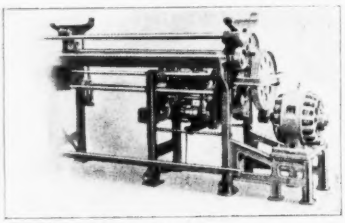
Farrel-Birmingham Co., Inc.

Fig. 4. Combination Making and Straight Wrapping Machine

the gasket joint or disturbing the adjustment of the die fixtures. The head can be mounted for either right- or left-side delivery and is used for tubing both hose tubes or covers. Rubber covering for ⅝-inch garden hose or its tubing can be done at the rate of 300 to 400 feet per minute with this machine.

Fabric Plies

The bursting strength and flexibility of hose depends on the quality, construction, and number of its fabric plies. Square-woven, frictioned fabric is standard for ply construction of most wrapped-ply hose except in the case of garden hose where braided plies have virtually superseded woven fabric by reason of their greater pliability and the important feature of vulcanization in long lengths.



Farrel-Birmingham Co., Inc.

Fig. 5. Single Cross-Wrapping Machine

Bias Cutter

Fabric for hose plies is power cut on bias cutters. These machines are of either vertical or horizontal type. With both forms, cooperating mechanisms are required for stripping the liners from the rolls of frictioned stock and for joining and rolling the bias sections in strips of hose length. Figure 2 shows a bias cutter of horizontal construction.

Wrapped Hose Machines

The dimensions of a hose department making wrapped hose in sections 50 feet long are necessarily large because the mandrels somewhat exceed that measurement, which must be matched in length by the several machines for performing the successive stages of the work. These stages are poling the tube on mandrels, rolling up the plies and cover, wet cross-wrapping before curing, and unwrapping and stripping the hose after curing.

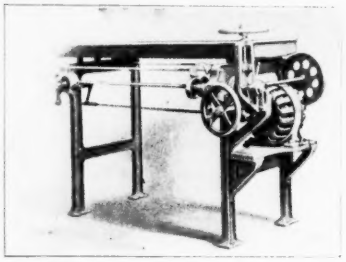
Poling tubes on the mandrel is done on a machine as in Figure 3. An endless belt travels over 2 pulleys located one at each end of the machine. On its outer surface the belt has small rubber-covered V-blocks for supporting the mandrel. When one end of the tube has been started on the mandrel and partially inflated, the belt is set in motion by throwing in the friction clutch. The mandrel is prevented from moving forward by the bracket shown at the head of the machine, and the V-blocks on the belt carry the inflated tube over the mandrel until the latter is entirely covered. The machine is then stopped; the tube cut off; and the covered mandrel removed to the making machine.

Figure 4 represents a combination making and straight wrapping machine. With it the making or ply rolling operation is performed on one side and applying the straight wrapping on the other, thus saving the space of one machine. The machines are air operated, each side having single acting cylinders. The air is used for applying pressure to the top rolls, which are lifted by counter weights. The 2 lower rolls on both the making and the wrapping sides are power driven and adjustable for different sizes of hose; the top roll in each case is driven by frictional contact with the hose.

Immediately following the rolling on of the exterior temporary straight wrapper, a spiral cross-wrapping is run the entire length of the hose in the cross-wrapping machine. The motor drive of this machine is pictured in Figure 5, and in Figure 6 that of the machine for unwinding the cross-wrapper and blowing the hose off the mandrel. The hose brought from the vulcanizer is laid in the tank and sprinkled. From there each piece is laid on the small side rollers of the machine, and the cross-wrapper removed. Following this operation, by turning the hand wheel at the driving end of the machine the conical rollers can be raised, thus lifting the hose clear of the driving rollers. One end of the hose pole is then gripped in the vise at the driving end; the hose is inflated and blown off the pole.

Other Hose Wrappers

The mechanism of another wrapping machine, illustrated in Figure 7, operates as follows. The pole bearing the hose is placed between the lower rolls of the machine; pedal *A* is pushed down, opening valve *B* supplying air to cylinder *F*, which instantly shuts off the motor with dynamic braking. The time-limit yoke then raises the top roll. This yoke prevents the motor from functioning before the upper roll rests on the hose and stops the motor before raising the upper roll off the hose. By thus eliminating the earlier mechanical cams and clutches the action is more positive and much quicker as the machine will operate in 4 seconds, or 3 times faster than formerly. Lubrication of the moving parts is effected by the Alemite system at points on each frame as at *E*.

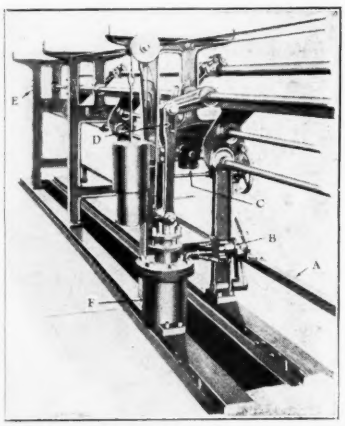


Farrel-Birmingham Co., Inc.

Fig. 6. Stripping Machine

A pedestal-type machine for wrapping short-length railway hose is shown in Figure 8. Here the interval between the lower rolls is accommodated to the outside diameter of the hose by a hand-crank. The top roll raises by counter weight and is lowered into contact with the hose by pressure exerted on the foot pedal by the operator.

In conjunction with hose wrappers so-called "rag rollers" are necessary for rolling wet fabric strips, or "rags," on wooden spindles from which the strips unroll as they are guided along the length of the hose in the wrapping machine.



William R. Thropp & Sons Co.

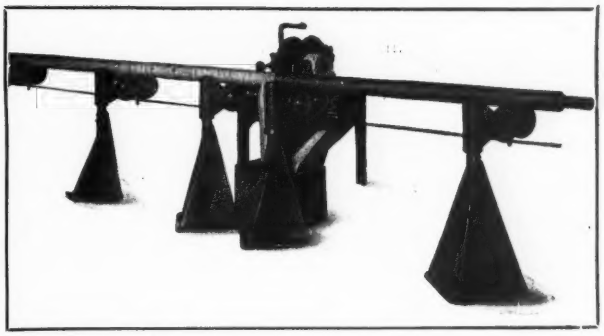
Fig. 7. Cross-Wrapping Machine

Spiral cross-wrapping is executed with tension sufficient to consolidate the hose construction by expelling any included air and to insure good union of tube, plies, and cover by vulcanization. Rag rollers are built singly as pictured in Figure 9 or in groups of 6-machine units.

Newer types of machines for wrapping and unwrapping with woven cotton tape have been designed to simplify these operations and improve the appearance of the hose.[6] The wrapping machine represented in Figure 10 is capable of wrapping from ¾- to 4-inch hose. In operation the poled hose passes through the machine and is spirally wrapped with wet tape under even tension. The need of a straight underwrapping is eliminated because the tension of the wrapper is machine controlled.

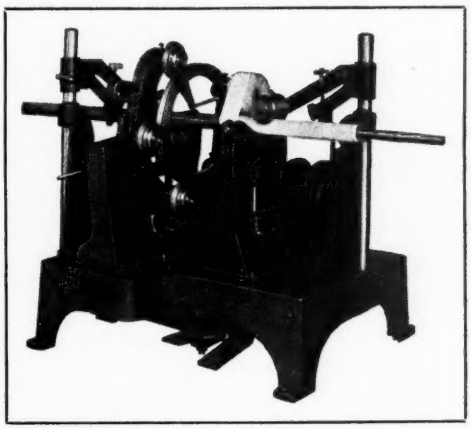
The wrapping time exclusive of handling a 50-foot mandrel averages one minute, being dependent upon the lead of the tape and the size of hose being wrapped. The drive is direct by means of a 1 h.p. motor.

The companion machine to the one just mentioned is shown in Figure 11. It is used for unwrapping woven cotton tape after vulcanization, wetting and spooling the tape as it is unwrapped. The spooling is effected in such manner that when another hose is wrapped, the tape will be applied so that the strain will always be on the same edge. This feature eliminates wrinkles and increases the life of the tape. The drive for spooling is obtained from a ½ h.p. motor operating through a friction disk and flexible coupling so arranged that the machine may be stopped at will.



Terkelsen Machine Co.

Fig. 11. Unwrapping Machine



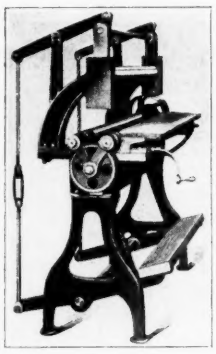
Terkelsen Machine Co.

Fig. 10. Wrapping Machine

Braided Hose Plies

Braiding is a convenient and rapid method for forming the ply structure of garden hose where flexibility and long lengths are desired. For such work a braider is constructed with 2 plates between which a train of gears operates. These gears have flanges or horns at the top that engage the bottom end of bobbin carriers on which the yarn is held. The upper of the 2 plates is formed with a serpentine path to guide the carriers. The latter are milled to such shape that they fit into the groove in the top plate, and their lower end is in the form of a lug which engages in the horns of the horn gears that are the means by which the yarn carriers are made to travel around the machine. The braider pictured in Figure 12 is a double-deck machine designed for covering a cable, packing core, or air inflated hose tube with a 2-ply braid. A braider of horizontal type is used to braid yarn or wire over tubes on poles for special hose in 50-foot pieces. Braiders are capable of high-speed production according to the number of stitches per minute and the strength of the yarn.

In braided long-length hose the tubing machine is used for applying the cover. The hose is passed through a die of proper size in the head of the machine.



Adamson Machine Co.

Fig. 8. Wrapping Machine

Adamson Machine Co.

Fig. 9. Rag Roller

[6] "Improved Hose Wrapping System," India Rubber World, Feb. 1, 1928, pp. 67, 72.

Spiral Cord Plies

The newest development in small hose construction employs 2 plies of cotton cord applied over the tube by a special spiral winding machine. The layers are oppositely spiraled to counteract twisting effect in the hose. The method is rapid, and the hose very resistant to bursting. The system is adapted to long lengths, but has not been generally used because of inherent technical difficulties. After these are eliminated, however, the process and the product should prove popular.

Woven Hose

Rubber-lined woven construction is standardized for fire department and mill hose. For moderate pressures it is made single- and for heavy pressures double-jacket. An installation for weaving hose jackets is represented in Figure 13. Yarn creels are grouped in frames below the looms arranged on a gallery. The hose rises from the center of the loom as fast as woven and descends by an overhead pulley to the lower level where it is cut in lengths for 50-foot hose sections.

A 4-inch circular loom produces single- or multiple-jacket tubular hose. The product may be woven hollow or as a tight covering upon a firm insertion such as a heavy rubber tubing, spiral metal hose, or cable. Fire hose is woven hollow, and the rubber lining drawn in afterwards and vulcanized under steam pressure. The capacity of the machine ranges from ½-inch inside to 4¾ inches outside diameter.

Long-Length Wrapped Hose

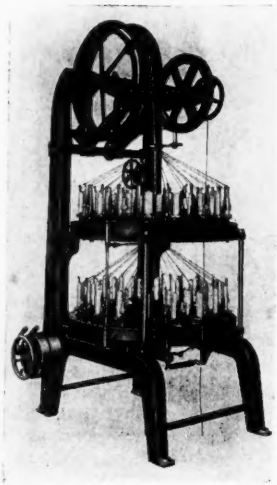
Only in very recent years has it been possible to manufacture wrapped hose in lengths longer than 50 feet with bias-cut fabrics, which placed the old-time, standard construction, garden hose in very great sales disadvantage. This condition has been overcome by an entirely novel type of hose making equipment designed for producing bias-cut wrapped garden hose, pneumatic, and other small hose in continuous lengths without the aid of a

mandrel and suitable for the lead encasement method of curing like other constructions of long-length hose.

In operation, the hose tube is run in lengths of 500 feet or more coiled on a revolving platform located at the receiving end of the machine. Bias-cut frictioned fabric, spliced into a roll, is supported in a rack for continuous delivery with the tube into the making-up mechanism, which proceeds as follows.

The lightly inflated tube and the strip of frictioned fabric pass simultaneously through the machine. As they advance, the fabric is automatically wrapped spirally at a long angle of contact upon the tube as it advances between 2 rubber belts set at an angle causing the fabric to spiral around the tube and enclose it.

At the discharge end of the machine the wrapped construction is received and coiled on a revolving platform and is ready to be completed by receiving a rubber cover which is usually applied by passing the hose through the die of a tubing machine. It is quite possible, however, to apply a cover to the hose in the making machine coincident with wrapping the fabric. The covered hose is lead encased, preparatory to vulcanization, in the usual manner by means of the lead press.



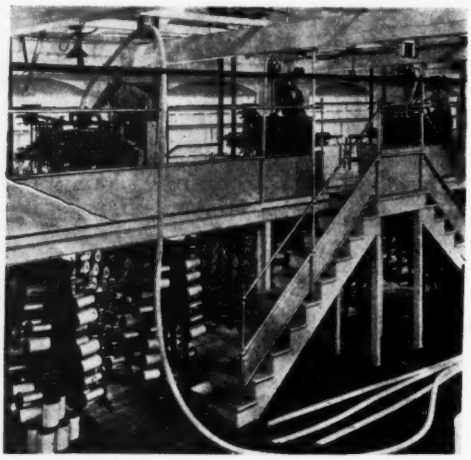
New-England Butt Co.

Fig. 12. Double-Deck Braider

The speed of this making machine is variable, but it normally will produce 50 feet of garden hose a minute. The product is excellent in appearance, like all hose cured by the lead-press process. It is superior in friction test and bursting strength to mandrel-built wrapped-ply hose of the same ply. The floor space and power requirements are considerably less than those for other types of hose machines. These economies as well as the saving in materials and labor are of very marked proportions.

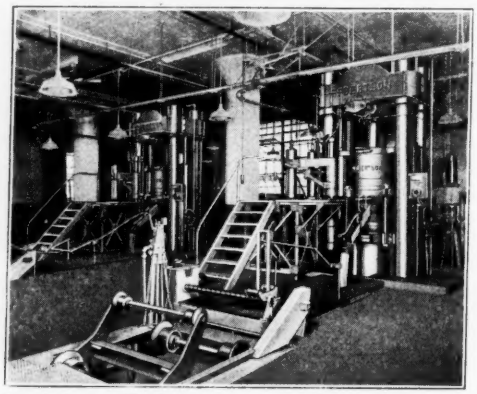
Hose Encasing Lead Press

An installation of 2 units for encasing garden hose is shown in Figure 14. This represents in duplicate a crane supporting an ingot of lead to be loaded into the hydraulic press for extrusion as a sheath on the hose drawn through a die located below the platform level. In the process the hose enters the press at one side and emerges encased at the opposite side. In the picture the hose can be seen emerging just above the trough conveying away the flow of cooling water from the die, ready to be reeled for vulcanization.[7]



John Royle & Sons

Fig. 13. Woven Hose Installation



John Robertson Co., Inc.

Fig. 14. Installation of 2 Lead Encasing Presses

[7] "Lead Encasing Press for Vulcanizing Molded Hose," INDIA RUBBER WORLD, Dec. 1, 1928, p. 80.

Resins

THE place of resins in the rubber industry is a minor one compared to their importance in the manufacture of paint, varnishes, enamels, molded plastics, and insulation. A limited amount of WW grade resin and Gilsonite long has been used in making a high-gloss finish for rubber shoes and automobile topping; the varnish is applied before vulcanization of the goods. A thin coating of shellac serves to enhance the color of water bottles, fountain syringes, tubing, etc. A resin possessing properties ideal for modern industrial needs still engages the efforts of research chemists.

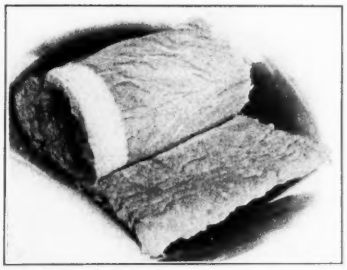
The brilliance and the durability of Russian rubber shoe varnish were the despair of rubber shoe manufacturers of an earlier day who vainly tried to equal it. Its chief lack of adaptability to American practice was the length of the drying period required before the goods could be packed. It seems that American manufacturers are still longing for the ideal rubber varnish resin, of which, it is said,[1] it must form a perfect bond with practically every rubber stock, possess the greatest elasticity, flexibility, tensility, and toughness of rubber and enhance the appearance of rubber articles.

[1] "Varnishes and Lacquers for Rubber Footwear." D. D. Wright, *Ind. Eng. Chem.*, Feb., 1933, pp. 140-41.

Modern Heat Insulation – II

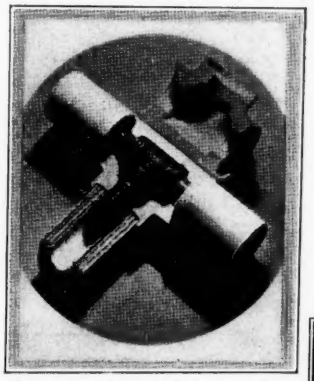
B. W. Wetherbee[1]

THE construction of a power plant or an hotel, or any other kind of building complete in itself, usually involves insulation by contract. To digress briefly, notice should be made of the rapidly growing associations of insulation engineers, contractors, and frequently manufacturers also as members, as an important step in the direction of making first-class jobs assured. Each of the members posts a performance bond (about $5,000) which makes certain that a given job will be carried out as specified.



Philip Carey Co.

Rock Wool Blanket



Norristown Magnesia & Asbestos Co.

Fitting Jackets

Most factories, however, never stop growing, and the responsibility of installing and maintaining the plant insulation falls upon the maintenance department. It is an important duty of the maintenance chief, or in some cases, the head of the plumbing department, to see that all heat losses are cut to a minimum. In the boiler rooms where any heat losses are uncomfortably obvious, one usually finds a fairly good installation; but critical surveys should include a regular inspection as a matter of routine. Boiler tops and ends of drums should be covered with magnesia blocks wired or held in place with wire mesh and finished off with a layer of hard cement. If the side brick walls have been left uncovered, remedy the omission with a coating of asphalt and asbestos to prevent the infiltration of cold air and then fasten 2-inch wire mesh 1¼ inches from the wall by means of bolts or tie wires and upon this build up in successive coats a 1¾-inch layer of magnesia cement, finished off with hard-finish cement. A good method for protecting the insulation from abuse is to place a metal shield around the base of the wall, 2 or 3 feet high. The insulation of all piping leading from the central boiler room should be according to the advice of a capable engineer; if this is not practicable, the problem may well be referred to a reputable manufacturer of these materials.

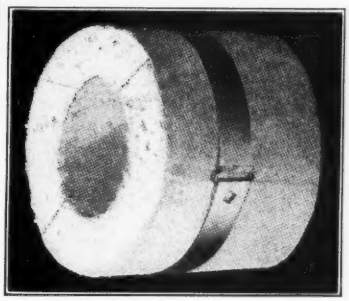
In making a survey of the plant, the brief résumé of products and materials used at the various temperature ranges will help. As a further aid to inspection, the following table of insulation thicknesses will be a useful, if not very profound, guide to the adequacy of the insulation. The data given here represent a composite of technical opinions, manufacturers' recommendations, and insulation practice in factories.

These figures are based on average operating conditions; extraordinary service demands require different treatment and should be coped with accordingly. For example, thickness should be increased when steam for process work must be maintained at an undeviating temperature; when pipes run a long distance or are exposed to rapidly changing atmospheric or external temperatures.

All insulations and particularly pipe coverings should fit snugly on all straight runs and at the fittings and joints; infiltration of cold air means heat losses. All valves and fittings should be covered as carefully as the straight pipe, in fact, more carefully if possible. One authority expresses the importance of this point by an equation, viz:

$$\text{therm. loss/unit area} \begin{Bmatrix}\text{valve}\\ \text{fitting}\end{Bmatrix} = \text{loss/unit area of 18-inch pipe at same temperature.}$$

A fitting has a large radiating area from which relatively tremendous losses take place. There are 2 methods of covering fittings. The older, but still popular method of coating the fitting with magnesia cement up to the adjacent thickness is perfectly satisfactory from a standpoint of thermal efficiency, but takes somewhat longer time and is not quite so neat as the newer method of employing molded and formed jackets die-pressed by the manufacturer to fit standard parts exactly. The jackets, made in 2 or more sections, are placed over the fitting and finished off with the regular canvas jacket.



Johns-Manville Corp.

High-Temperature Insulation

If the piping system has been adequately insulated, there is no reason why the job should not be made complete by inspecting all process equipment to make sure that after pains have been taken to conserve heat in the piping system, the effort is not defeated by wasting it

INSULATION THICKNESS

Bare Pipe Size, Inches	Hot Water 175°F.	Steam at 10 Lbs. 239.4°F.	Steam at 150 Lbs. 365.7°F.	Steam at 200 Lbs. 100°F. Superheat 487.8°F.
	Minimum Insulation Thickness in Inches			
1½ and under.....	**¾**, ⅞	¾, 1½	**1½**, 2	**1⅞**, 3
3	**⅞**, 1½	¾, 2	**1⅞**, 3	**1⅞**, 3

NOTE: Figures in bold face, coal at $4.00 per ton; figures in light face, coal at $8.00 per ton.

[1] Consulting chemical engineer, Cromwell, Conn.

subsequently in the equipment. It is by no means uncommon to see a well-insulated pipe system leading to a battery of presses left immodestly bare. Regardless of the original cause of the omission, here is an excellent chance for the foreman of the department to cut down his overhead. The heads and the bases of presses may be covered with magnesia blocks wired in place and covered with a layer of hard-finish cement; the sides and back can be sheathed with molded asbestos panel to cut down a large portion of the radiation loss. Simply painting the edges of the platens with aluminum paint 2 or 3 times a year will decrease heat losses 7 to 10%. The convenient heat in the head of the press is sometimes utilized by installing a preheater directly in contact with the head and insulating as a unit.

Press and vulcanizing rooms are usually uncomfortable places in which to work especially in warm seasons, but adequate insulation will vastly improve working conditions. In one instance a large manufacturer of molded goods had a battery of 30 presses in line, each backed by a window opening to the prevailing wind. In summer the uncovered feed and exhaust piping in combination with the presses radiated heat to such an extent that unless the windows were opened to allow the breeze to sweep across and through the presses it was impossible to work with any degree of comfort. Fortunately some of the presses were equipped with temperature recorders which showed such wide fluctuations that the necessity of insulation became imperative. The results of a careful study and good workmanship were a comfortable room in which to work, acceptably slight temperature fluctuations, and an estimated 70% saving in fuel.

Air-curing equipment, particularly the cylindrical type run at 285° and 400°F., if not properly covered, is a large radiator of heat. This equipment is well taken care of with blocks wired in place and finished off with hard cement; if a satisfactory job has been done, there is no reason why the radiated heat loss should be more than 8% of the bare loss. Low- and high-temperature driers should be well insulated with a double-purpose material which will surely be fireproof. Do not make the mistake of one individual who lined his vertical 250°F. drier with an insulation board not designed for temperatures above 150°F. That there would be a fire in the future was only to be expected. The same person, having learned a rather costly lesson after losing the drier and one corner of the building, replaced the unit and lined it with magnesia and asbestos panel. Too often a prohibitive ordinance against the plain wooden type of drier is not enforced in the interest of safety and economy.

Generally speaking, the difficulty of insulating certain awkward pieces of equipment should not be accepted unquestioningly. For temporary installations where the temperatures encountered are not severe, asbestos paper or listing may be used. Many times when the use of the conventional blocks, panels, or coverings is not feasible, mineral wool blankets may be placed around the equipment. These blankets are made by quilting a batting of mineral wool upon wire mesh or metal shell. One other product often used is insulating tape made from asbestos. This can easily be used for small pipes having spirals, bends, or equally difficult configurations. Vacuum driers, steam-jacketed mixers, and impregnation tanks are equipment often in need of insulation for more efficient performance.

The statement was made above[2] that a material with high thermal conductivity is not for this reason alone barred from the field of good insulating materials. Aluminum foil by virtue of its ability to retain a bright reflecting surface thus has entered the insulation field recently; the low heat storage capacity of the foil is far exceeded by its reflective power. Although the best results are obtained when the foil is spaced concentrically about the pipe, the more convenient method usually followed is to crumple the foil lightly and place it around the pipe inside a protecting shell. This material has certain advantages which are making its use popular: it allows free expansion and contraction of the pipe since it is not applied as a plastic; it is very light and has no appreciable sagging tendency; the weight per cubic foot of the crumpled foil is a few ounces only; it will withstand vibration and, of course, possesses good chemical resistance.

Glass wool is another material which has its particular characteristics and should be mentioned as an interesting new development. According to Foster[3], this material was first used for insulation purposes in German marine work; only recently the electric spinning method has been introduced into England. Battings of glass wool keep their shape well, are resilient, and possess very high chemical resistance. In addition to being an insulating material of the first class for temperatures up to its melting point, it is also a good sound insulator.

Probably the latest development in the industry is a material made from a mica-like mineral. Its manufacture comprises the subjecting to heat of small flakes having a thickness in the order of 1/10,000-inch. These flakes expand in thickness to about 5/32-inch, entrapping a tremendous volume of air. The resulting product not only possesses the desirable characteristics of a mineral, but also through its very large dead-air space a low conductance value.

[2] See India Rubber World, Oct. 1, 1933, p. 26.
[3] *India Rubber J.*, 85, 22, 7.

Coloring Rubber

(*Continued from page* 28)

further handling. A satisfactory solution consists of 2 pounds of magnesium carbonate dissolved in 4 gallons of 26° Bé. ammonia water.

A final layer about 1/64-inch thick is then applied to the material, such layer compounded by milling, and for example, consisting of:

	%
Pure rubber	40
Zinc oxide	4
Sulphur	½
Diphenyl-guanidine (accelerator)	½
Blue-tone (color)	1
Whiting	remainder

After the final layer is applied, the rubber surface may be coated with metal carbonate. It may then be varnished and cured. The curing, for example, consists in subjecting the material to 270° F. for 3 hours.

33. Darling and Powers, 1,846,820, Feb. 23, 1932. This patent describes a process of preparing a water insoluble color for incorporation with rubber, which comprises mixing a colloidal suspension of the color with rubber latex, coagulating, and milling. For details see India Rubber World, Dec. 1, 1932, page 43.

34. Murphy and Niven, 1,849,246, Mar. 15, 1932. A method of producing from aqueous dispersion of rubber, articles which have colored jazz-type patterns comprises introducing a former into a bath containing at least 2 aqueous dispersions having different colored pigments and thereafter withdrawing the former with its deposit.

(*To be concluded*)

Thickness Measurements of Calendered Materials

Roy W. Brown[1]

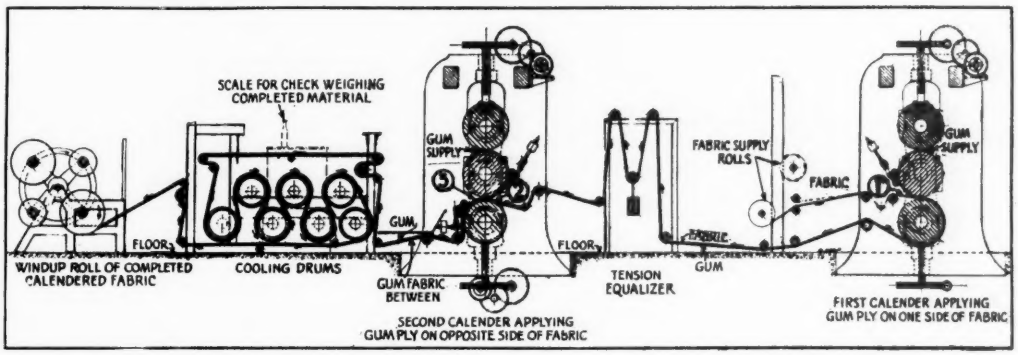


Fig. 1. Diagrammatic Elevation of Typical Train Calender and Equipment for Applying Rubber to Fabric

OWING to the mechanical complexity of the calendering process, an understanding of the underlying fundamental requirements of thickness measurements can best be realized through knowledge of the general process. This point is especially true if intermittent or continuous measurement is to be made of the moving material.

Economic Significance

The addition of 0.001-inch to the calendered material of one large rubber company last year would cost $60,000 with rubber at 5¢ a pound. When other manufacturers of rubber as well as other materials such as paper, linoleum, etc., are considered, it is apparent that errors of 0.001-inch in measurement or even a fraction of a thousandth amount to large totals even in depression years.

From this remark the first requirement of a measuring device, worthy of development, may be stated: (1) It must be capable of accurately measuring thickness to within a fraction of 0.001-inch.

Interruption of the calendering process disturbs the many factors which were properly balanced at a given operating speed such as tension of the material, supply of raw material, and position of the calender rolls in their bearings. The effect is to depreciate the quality and appearance of the product and cause a percentage of scrap material. Items of this nature plus the production time loss of the costly calendering equipment make it highly undesirable to stop the equipment or otherwise interfere with its operation to determine the thickness of the material being calendered. Hence the second requirement of a desirable measuring device may be written: (2) It must be capable of measuring the material while it is moving and without interfering with the speed of operation.

A modern rubber calender operates at a speed of 60 yards a minute, and the cost of material approximates $1 per yard. The product, consequently, may be produced at the rate of $1 a second. Conditions affecting the thickness such as amount, plasticity, and temperature of the raw material supply, position of calender rolls in their bearings, and tension of the fabric material being calendered may vary so rapidly that intermittent measurement of thickness would permit large losses by variations occurring in thickness during the interval between measurements. From the above the desirability of automatic control of thickness becomes evident; which control could not be readily actuated from an intermittent measuring device. These reasons with the monetary considerations mentioned above indicate a third requirement. (3) Thickness measurements must be made continuously and preferably recorded.

Limitations Imposed by Production Equipment

Calenders are equipped with rolls from 13 inches to 100 inches long, having diameters from 13 to 32 inches, and weighing from 750 to 74,000 pounds. Very heavy equipment is most generally used, frequently in synchronized trains of 2 or more calenders with accessory equipment, as shown in Figure 1, a typical arrangement for calendering tire fabric.

A large percentage of calender operations consists of applying a plastic material to fabric or other sheet material which is passed through the calender. The plastic material may be applied to either or both sides or in some cases a lamination of several plies made. Knowledge of the thickness of each layer is necessary if the final composite thickness is to be anticipated or controlled. Reference to Figure 1 shows the material at 1 being applied to one side of the tire fabric and at 2 to the other side. Note that the size of the equipment necessitates considerable yardage between the first and the second calenders and between the second calender and the

[1] Engineering Laboratories, The Firestone Tire & Rubber Co., Akron, O.

"wind-up" of the roll of finished material. Since the temperature and plasticity of the material are such as to prevent this material being removed from the rolls, it is apparent that thickness measurement must be accomplished on the calender roll.

Measurement of the completed material may, of course, be done after it leaves the calender in the most convenient place before final winding. The speed of operation and the cost of material make it preferable to measure the completed material as soon as possible; which position is, of course, on the calender roll (shown at 3 in Figure I).

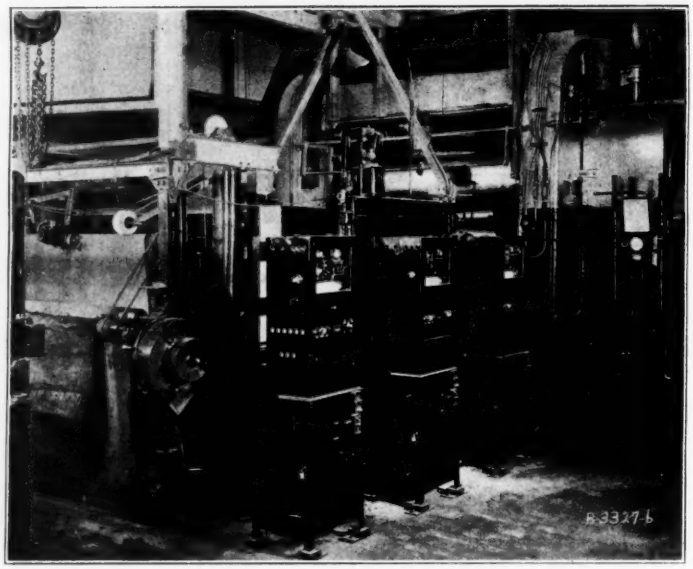


Fig. 2. Typical Application of Modern Magnetic Thickness Recording Instruments to a Calender Train

The relatively wide materials being calendered (up to 100 inches) make it impracticable with present available material to support a measuring device, movable across a wide sheet and the material being measured, so that it will measure with an accuracy of a fraction of 0.001-inch the thickness of the material passed between its foot or roller foot and the roller or bar supporting the material. The weight (thousands of pounds) of calender rolls and the heavy loads imposed by squeeze of the material necessitate heavy bearings. Experience has proved conclusively that clearances of from 20 to 70 thousandths of an inch must be allowed and that the position assumed in service by the roll varies by an appreciable portion of this amount. Thus it is impossible accurately to measure the thickness of a material on the calender roll when the measuring device is independently supported by a fixed position. Additional causes of inaccuracy with fixed support for the measuring device are eccentric rolls, roll distortion due to load and weight of the roll itself, and variation of roll temperatures, all of which are continuously encountered in regular calender production.

When research to develop a calendered material thickness measuring device meeting requirements (1), (2), and (3) was undertaken a number of years ago it immediately became evident that a new method of supporting the measuring element must be evolved to avoid the above-stated sources of error. The solution was found in supporting the measuring element under yielding pressure directly upon the material whose thickness was to be measured and measuring magnetically the gap thus formed. Previous devices not only measured the gap caused by the material, but the additional gap caused by the variables: namely, roll position as determined by bearing clearances, roll eccentricity, roll distortion, and roll temperatures. These difficulties were entirely overcome by mounting the entire measuring element so that it floats with the roll; thus the entire gap is caused by the material.

From this statement the fourth requirement of a device to measure the thickness of calendered materials may be given: (4) The entire measuring element must be so supported that the gap caused by the material being measured is the entire gap and is not varied by movement in space of the surface supporting the material.

Available Measurement Means

Attempts have been made to measure mechanically the gap caused by the material being measured and fulfill some of the 4 above-stated requirements. Two may be worthy of note. One supported a dial micrometer body from the metal roll surface at the sides of the material and arranged for the micrometer roller foot to contact the outer surface of the material. The other was similar except that the micrometer body was supported on circular rotating knives which cut the material to find support on the roll surface. Disadvantages and limitations of both are obvious.

The method of using a thermionic tube in an oscillating circuit and causing variations of current in the plate circuit by variations of the inductance or capacity of the tuned circuit caused by small displacement was described by H. A. Thomas[2] in 1923. The popularity of radio since then has resulted in numerous attempts to develop this principle into practical instruments. The method is seriously limited by inherent lack of accuracy which its proponents try to camouflage by emphasizing the enormous sensitivity easily attainable.

In the method[3] where capacity is varied by passing the material between 2 condenser plates another variable, dielectric strength, is introduced. Hence, to measure thickness (or weight) the dielectric strength must be assured constant. Unfortunately many factors[4] of insignificance to thickness and quality of rubber materials appreciably affect the dielectric properties. This defect, with the impracticability of applying so as to measure material directly on the calender rolls, limits usage of such device to slow moving calenders producing material such as electrical tapes, the dielectric properties of which are important.

Numerous methods of magnetic measurements have long been known.[5] Many of these can be adapted to measure an air gap such as described above. E. B. Moulin[6] has adapted the one method of magnetic measurement to determine ship power.[5] The modern large-size high-speed steam turbine was made possible through knowledge of blade and rotor vibrations measured magnetically. One method was described by A. V. Mershon.[7] These and other similar applications have proved the magnetic method of measurement adaptable, accurate, sensitive, and capable of meeting the enumerated requirements for measuring thickness of calendered materials.

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[2] *Engineer*, Feb. 9, 1923.
[3] U. S. Patent No. 1,743,302.
[4] "International Critical Tables," Vol. II, pp. 273-76.
[5] For résumé see "Dictionary of Physics," Glaysbrook, Vol. II, pp. 449-510.
[6] Cambridge Instrument Co., Ltd., London, England.
[7] *Gen. Elec. Rev.*, Nov., 1926, pp. 815-17.

Essential Factors

Assembling requirements having been given under (1), (2), (3), and (4), with the conclusion of the above paragraph, the essentials of a measuring device to determine thickness of materials calendered in modern processes may be stated thus: Continuous recorded values of thickness, accurate to within a fraction of 0.001-inch are to be made, preferably by magnetic means, on the calender roll without interfering in any way with the calender operation. The actuating element is to be supported under yielding pressure so that the gap is varied only by the thickness of the material.

To meet the severe conditions existing in calender rooms all instruments must be well protected from dust, vibration, and shock. Ultimate usefulness will be much enhanced if protective interlocks and automatic synchronized starting and stopping are provided. Figure 2 shows a modern installation embodying all requirements discussed in this article. One instrument measures the thickness of rubber applied to one side of the fabric; a second instrument for the rubber applied to the opposite side; and a third for the combination of the 2 rubber plies and the fabric. Thus complete measurements are recorded of all phases of the important calendering operation.

Para-Graphs

THE thickness of rubber strips for making thread can be controlled throughout the calendering process with the aid of a new measuring device to be attached on both sides of a calender roll. The system is also adapted for use on spreading rolls.

Sole laying and pressing machines are the subjects of 2 recent patents. The first relates to continuous multiple sole pressing and cementing. An endless carrier supports a number of air-operated pressing devices. Within each of these a shoe with its freshly cemented sole is held under pressure as the device travels through a warm air drying tunnel to the point of starting. The shoe is there transferred to a conveyer passing on to receive any subsequent finishing operations.

Transparent mats have a top of colored or printed fabric protected by a thin transparent para rubber coating through which the texture, coloring, and design of the fabric are visible. The mats are easily cleaned, come in all sizes and colors, and can be used in any room in the house and also in stores.

A machine has recently been developed for separating sheets of crepe or sheet rubber. It has a movable carriage which holds the bale. A hook is inserted in the lower end of the bale, and when moved upward by a windlass, it strips off a sheet of rubber. In this way a bale weighing about 100 kg. can be divided into about 20 parts.

A rain cape, which has been a big seller this season, is made of live rubber and is extremely light in weight. It comes in a variety of colors, but bright red has been the most popular number.

A new type of dipping form, which eliminates the disadvantages of the varnished wood molds, has been developed by 2 German firms working together. The molds have a coating as smooth as glass; it will not crack and is insoluble to all usual solvents. It will also resist severe mechanical strain, acids, and temperatures from 150° to 200°.

A rubber glove with only a thumb and index finger is the subject of a recent British patent. It is intended for domestic use and is secured at the wrist by a glove fastener.

Rubber can be split or beveled on a handy machine that has for many years been used in Germany by the leather industry for splitting and beveling leather parts. Any kind of edge, up to a width of 50 mm., may rapidly be produced on pieces of any shape.

Baggage truck pneumatic tires are modified airplane tail-wheel tires. They are now being used on the new types of 2- and 4-wheel baggage trucks.

An automatic batch mixer for doing the dangerous work of rubber mill mixing is disclosed in a recent patent. This mechanism is attached to a 2-roll mill located beneath a Banbury mixer where it receives and completes the mixing of the batch. This work is performed by a pair of air-operated stock plows electrically controlled as they traverse back and forth the length of the front roll of the mill. The mixing plows just clear the face of the roll. The brackets that hold the plows serve to roll up the material cut and turn it back to the bite of the mixing rolls. The plow units traverse back and forth over the mixing roll by means of a sprocket chain.

Thin dipped rubber articles are removed from the dipping forms by an automatic dusting, brush rolling, and blowing-off apparatus, which is the subject of a recent patent.

Rubber tire chains are constructed of latex impregnated side ropes, rubber covered and cross connected with grips of similar construction. The grips are molded in rubber of tire tread quality with anti-skid design and conform to the tire contour. The side ropes are adjustably fastened by non-slipping end clamps.

A 2-car, stainless steel, rubber-tired gasoline-driven train of 480 h.p., accommodating 76 passengers and capable of making 75 miles per hour, has been built for the Texas & Pacific Railroad. The passengers are carried in the rear car, which is mounted on 2, 8-wheeled rubber-tired trucks.

A rubber glove that can be worn on either hand is being demanded by European surgeons. To that end Continental manufacturers make a reversible glove with the thumb projecting from the side of the glove.

Rose colored sheeting is used in the hospitals of Roumania. The standard type, for some reason or other, of hospital sheeting as produced in the United States has no sale in Roumania.

Filling molds rapidly for the production of heels, soles, etc., is effected by an extrusion device which not only obviates the tendency of the stock to move out of the mold cavity as it leaves the confinement of the extruding mechanism, but it facilitates mold filling by providing for removing trapped air from the cavity during the extruding operation.

Rubber for extruding is prepared by an inexpensive method and apparatus for heating and delivering rubber composition at uniform temperature to a tubing machine for continuous extrusion. It provides a tank through which the rubber stock is passed and in which it is subjected to the action of water or steam or both in order to soften it suitably for extrusion to dimensions, as, for example, in cylinders for the production of fruit jar rings.

EDITORIALS

No Rubber Dollars

CERTAIN economists argue that the value of the dollar, which means its purchasing power, can be regulated, or if that should prove ineffectual, the weight could be controlled, that is, the regulation would state how many grains of gold a dollar should contain.

The assertion that the dollar's value can be regulated is certain of challenge from financial experts. However, if this were so and the dollar could be controlled, who would control the controllers? It is quite apparent to everybody that this procedure would be difficult.

When a dollar represents so many grains of gold, it stands for something that can be weighed and does not alter from day to day. It may not be perfect as an instrument for measuring value, but it is far better than a rubber band would be with a rubber grower tugging one way and a manufacturer pulling in the other.

World Business Recovery

THE low point of the world business depression was reached in the summer of 1932. In most countries the lowest ebb was in August, according to the National Industrial Conference Board. Industrial production in the United States, Germany, France, Canada, Belgium, and other countries reached the low point in the middle of 1932. Since that time there has been a distinct improvement in business activity throughout the world's industrial centers, and also a marked recovery in world prices of raw materials including rubber. In the last quarter of 1932 these prices again turned downward, but at the year's end most staple commodities remained above the low points of the year.

Restriction of bank credit, due to the desire for increased liquidity, came to an end in the second half of 1932 and eliminated one of the powerful forces of deflation. Central bank rates of discount and open-market interest rates for short-term funds were reduced to the lowest levels since the World War. A tremendous volume of idle funds has accumulated in the principal financial centers and is available to finance an extensive business revival.

The volume of unemployment remained high throughout 1932, but the increase in unemployment was stopped.

The relations between creditor and debtor countries were fundamentally altered. The debtor nations were able to adjust their balances of merchandise trade to the situation created by the complete cessation of international lending. Practically without exception the debtor nations have converted large import surpluses into considerable export surpluses on merchandise account. This conversion was accomplished through a great reduction in the total volume and value of foreign trade, imports having been reduced more drastically than exports. The creditor nations, on the other hand, with the exception of the United States, continued to maintain large import surpluses, while the American surplus of commodity exports was drastically reduced. These shifts in the balances of merchandise trade prepared the ground for a new movement of international funds and facilitated a recovery of prices.

In 1932 the problem of German reparations was eliminated from the sphere of economics and politics. The inter-allied debts to the United States are still a political factor, but to all intents and purposes they may be regarded as non-existent, from the point of view of their influence on the balances of international payments.

On the whole, the creditor-debtor relations have reached a stage where the threat of new defaults has largely disappeared and where the question of refinancing and of making new arrangements with the debtors deserves serious attention on the part of the creditors. It should be added that the position of the debtor countries has been materially improved by the depreciation of the dollar and the pound sterling.

A British Dilemma

FOR centuries the people of the world have striven to secure cheap commodities and an abundance of leisure. By the application of scientific and mechanical methods, this end has largely been attained, but instead of the anticipated benefit to mankind, the world is plunged to the depths in unparalleled unemployment and deprivation. The distribution of both commodities and leisure has failed. People are working unnecessarily long hours while others have complete leisure and are unemployed. In a world with commodities even to burn, there are millions in desperate need.

Currency inflation by the issue of more paper money is advocated, and yet there is no evidence of a shortage of money; in fact the banks have enormous deposits awaiting investment. In America, millions of borrowed money are to be spent on public works whereas in this country such a procedure is regarded with suspicion as not contributing to the solution of the problem.

A suggestion which seems to meet with more general favor is that, to eliminate over-production, all manufacture and agriculture must be controlled. Effective control must mean either fewer employed or increased prices, either of which is not likely to appeal to the millions already unemployed. Control of the rubber industry would appear to present an awkward and formidable problem. Is the control to be effected solely by agreed action in the East to restrict raw rubber production, and if a rise in price is secured after a period of time, will not exports from other parts of the world be encouraged? Is there to be control of manufactured articles in each country, and if so is that control likely to be accepted in the Eastern Hemisphere? As control is certainly not likely to be effective without state compulsion, is agreement likely to be reached on any scheme by all the numerous interested parties and governments? Finally does such a scheme offer definite prospects of achieving the objects set forth above? *"I.R.I. Transactions," the official organ of the British rubber industry.*

What the Rubber Chemists Are Doing

A. C. S. Rubber Division Meetings

New York Group

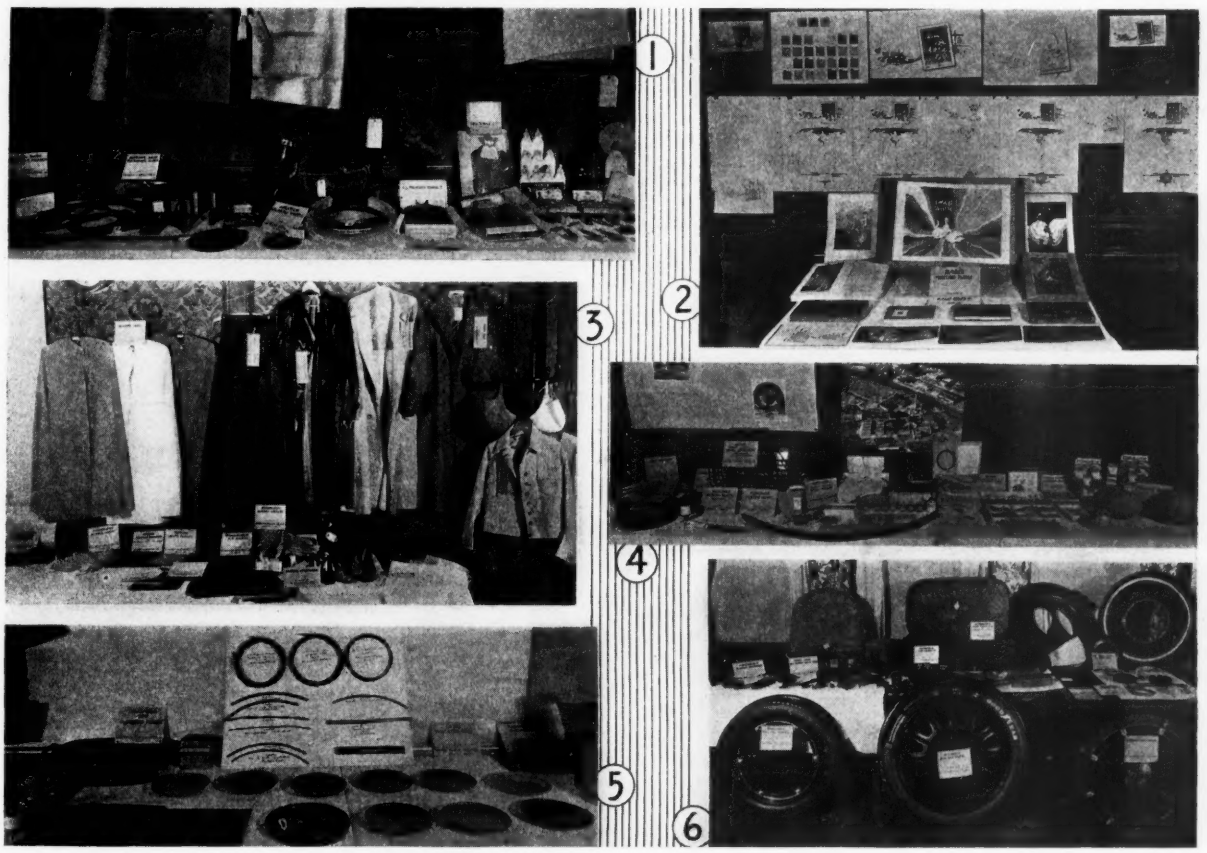
THE fall meeting of the New York Group, Rubber Division, American Chemical Society, held October 6, 1933, at the clubrooms of the Building Trades Employers' Association, 2 Park Ave., New York, N. Y., was attended by about 150 members and guests. The occasion was unusual because of the large and instructive exhibit of products embodying new uses for rubber. This display proved of much interest and served to illustrate the technical talks by chemists and engineers of the exhibiting companies. Résumés of the 5 talks follow.

Automotive Rubber Mountings

Kurt Saurer, development engineer, Firestone Tire & Rubber Co., Akron, O., described the development of rubber motor mountings for automobiles and for other suspensions where elimination of vibrations and silencing is desired for protection of the vehicle construction and riding comfort. An especially effective new engine mounting was shown. This supports the engine on an air cushion confined in a rubber dome by a rubber closure. These parts are vulcanized to their respective metal supports and act in shear. Rubber universal joints are the latest innovation in the application of rubber to automobiles and are expected to be extensively used in designing cars of the near future.

Latex Insulated Wire

Charles R. Boggs, Simplex Wire & Cable Co., Boston, Mass., described the method of applying rubber from vulcanized latex as electrical insulation on small wire conductors. The fact that friction causes coagulation of the rubber in latex and the difficulty of applying rubber uniformly about a small wire by mechanical means necessitated a new process. This consists



Exhibition of New Developments in Rubber Products

Fig. 1. Balloon Fabrics, Thiokol and DuPrene Products, Brake Linings, Clutch Facings, Belting, Abrasive Wheels, Water Bottles, Nipples, Gaskets, and Diaphragms. Fig. 2. Rubber Printing Plates. Fig. 3. Capes, Corsets, Girdles, Rug Anchors, Aprons, Footwear, Raincoats, Bathing Caps, Jackets, DuPrene Coated Fabrics, Latex Coated Fabrics, and Rubber-backed Carpet. Fig. 4. Semperit Railwheel, Road Markers, Fan Belts, Anode Products, Carbon Black Hose, Garden Hose, Reodorants, Toys, First-Aid Bandages, and Footballs. Fig. 5. Plioform Products, Insulated Wire, and Upholstery Fabrics. Fig. 6. Rubberized Hair Cushions, Automotive Products, Airplane Tires, Pneumatic-tired Railway Wheels, Tire Chains, Cord Garden Hose, Tubing, Hydraulic Packing Rings, and Engravers' Gum

of running the wire upward repeatedly in a flow of compounded vulcanized latex descending in a series of water falls and drying the deposits thus accumulated on the wire by passing it through a drying chamber alternately with immersion in the latex. The rubber thus applied possesses superior insulation value over ordinary dry rubber insulation because the soluble salts present leave the rubber coating by osmotic pressure developed during drying. Small wires insulated by this method are formed into cables of about ⅓ the size of cables with the same number of conductors insulated by former methods.

Plioform Moldings

L. B. Sebrell, Goodyear Tire & Rubber Co., Akron, O., illustrated his talk on Plioform by lantern slides tabulating group reactions based on rubber, and the physical and chemical characteristics of Plioform, the new molding plastic, resulting from the chemical treatment of rubber. An important quality of Plioform moldings is their practically perfect freedom from absorption of water, unlike moldings of the usual thermo-set plastic molding materials.

Modern Proofing

A. T. Schildhauer, of the United States Rubber Co., Naugatuck, Conn., gave a brief talk on the principles of proofing textiles with rubber with special reference to the production of suede leather effects by surfacing the goods with cotton flock.

Rubber Plate Printing

August Becker, August Becker Corp., Brooklyn, N. Y., expert in color printing, discussed the Jean Berté process of color printing from engraved rubber plates. His remarks were illustrated by engraved plates made for color separations and samples of color printing of great technical interest and artistic merit.

Rubber Goods Exhibit

The display included the latest in rubber specialties manufactured by leading companies in the trade. The exhibit was viewed with great interest by those present. The exhibitors and the goods on exhibition follow.

Dayton Rubber Mfg. Co., Dayton, O. Road markers, vibration dampers, cogbelts, and plain belts.

Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. Brake linings, molded and woven, for original equipment and repair work, clutch facings, abrasion grinding wheels, power transmission and conveyer belting, oil-resisting rubber specialties, etc.

Vulcanized Rubber Co., Morrisville, Pa. Hard rubber cigar and cigarette holders, pipe stems, percolator handles and nozzles, and feet for soda fountains.

Miller Rubber Products Co., Akron, O. Anode rubber-covered wire frame utensils.

Arrow Products Co., Inc., Watertown, Mass. Arrowlastic girdles.

American Anode, Inc., Akron, O. All-rubber corset produced by electrodeposition.

Maxwell Rubber Products Corp., Newark, N. J. Animal toys and cutouts.

Davol Rubber Co., Providence, R. I. Anti-colic nipples, water bottles, and laboratory flask caps.

Surgical Dressings, Inc., Boston, Mass. Sterilastic bandages.

Vulcan Proofing Co., Brooklyn, N. Y. Offset and impression printers' blankets.

The B. F. Goodrich Co., Akron, O. Art rattan hairlock cushion, mats, and spiral wrapped continuous-length garden hose.

E. I. du Pont de Nemours & Co., Inc., Fabrikoid Division, Newburgh, N. Y. Raincoats, sponge rug anchor, and samples of DuPrene coated fabrics.

The Barr Rubber Products Co., Sandusky, O. Rubber blocks for children.

Hood Rubber Co., Watertown, Mass. Yellow Mandarin suede cloth coat.

Binney & Smith Co., New York, N. Y. Fumonex all-rubber hose and colloidal Micronex for latex dispersion.

E. K. Howe & Sons, Inc., New York, N. Y. Railway wheel and tire, with photographs and drawings.

Premo Brushes, Ltd., Petersfield, Hants, England. Photographs of rubber brushes.

United States Rubber Co., New York, N. Y. Tires and tubes, cord hose, nontarnishing tubing, oil-resisting gaskets, Naugahyde products, slickers, suede and rubber coats, sport shoes, Keds and new-style gaiter, Multipore reducing corset, and several types and constructions of latex wire.

Givaudan - Delawanna, Inc., New York, N. Y. Samples of reodorized rubber goods.

Goodyear Tire & Rubber Co., Akron, O. Gas-cell and balloon fabrics and railway wheel and tire.

Firestone Tire & Rubber Co., Akron, O. Automotive rubbers, fan belts, inner tubes, and railway wheel and tire.

Simplex Wire & Cable Co., Boston, Mass. Latox lamp cord and cables.

Columbian Rope Co., Auburn, N. Y. Anti-skid tire chain.

Regional Meeting

THE Ohio-Michigan Region of the American Chemical Society held a regional meeting at Akron, O., October 13 to 14, 1933, at which George Sackett, of The Goodyear Tire & Rubber Co., Akron, read the following paper.

Plantation Rubber

The effects of a number of factors in the manufacture of smoked sheet on the rate of cure of the finished product, as shown by tests using a "pure-gum" type of stock accelerated with Captax, have been studied on a rubber plantation. The stock used for the tests reported in this paper shows generally that the rate of cure varies in a manner similar to that reported by various investigators who used a rubber-sulphur stock in their studies.

The results obtained in the investigations are as follows: large-scale blending shows that no improvement in uniformity is obtained in increasing the size of the blending unit from 500 gallons to 10,000 gallons of latex; the longer the trees are in tap, the faster is the rate of cure of the rubber produced from the latex; the use of formaldehyde or sodium sulphite as a latex stabilizer produces a slower curing rubber than does ammonia; a large increase of formic acid produces a sheet with a faster rate of cure; reduction of latex concentration at the time of coagulation reduces the rate of cure; increasing the length of time of coagulation increases the rate of cure; soaking the freshly milled sheets, prior to smoking, reduces the rate of cure; increasing the drying temperature reduces the rate of cure.

The conclusion is reached that the consumer probably will have to blend his rubber in order to obtain a uniform raw material because of the seasonal variations and the practical and economic difficulties standing in the way of the production of an absolutely uniform product.

Boston Group

THE Boston Group, Rubber Division, A. C. S., will hold its fall meeting and dinner at the University Club, 40 Trinity Place, Boston, Mass., at 6:30 p.m., Friday, November 3, 1933. Tickets at $1.75 each can be obtained from Secretary-Treasurer J. J. Sindler, Converse Rubber Co., Malden, Mass.

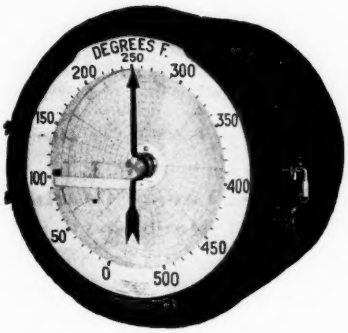
The papers to be presented are: "Problems and Opportunities of the Rubber Technologist," by R. P. Dinsmore, assistant to the factory manager, The Goodyear Tire & Rubber Co., Akron, O.; and "The Search for Rubber Fillers," by R. B. Ladoo, formerly of the United States Bureau of Mines, special investigator for non-metallic resources.

Calcene

CALCENE is a new reenforcing calcium carbonate pigment for rubber. It is a precipitated product of extremely fine particle size, running over 98% under 0.4 micron. The surface of the particles is coated with approximately 2% of a rubber-soluble organic material which prevents cementation of the individual particles and gives complete dispersion of the pigment in rubber.

Calcene gives tensile, tear, and abrasion-resistance values considerably higher than other reenforcing rubber pigments, except the gas blacks. At approximate loadings tensile and tear-resistance values, hitherto obtainable only with soft gas black, can be reached with Calcene. Its use is indicated in rubber stocks requiring high tensile and high resistance to tear and abrasion, especially where a black stock is not desired, or where a relatively soft modulus is desired along with the high physical properties.

New Machines and Appliances



Model R, Micromax Recorder

Micromax Temperature Recorder

A NEW line of round chart recorders that can indicate, signal, and control is represented by the instrument shown in the illustration. It has a clock-like dial sufficient in size to be readable across the room and is operated by the potentiometer system. Big and powerful as it is, this recorder is an accurate and responsive machine and highly dependable. It handles any 2-position or 3-position control and does it positively. It brings the advantages of null-type potentiometers and Wheatstone bridges to a price class that has never had them before. Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia, Pa.

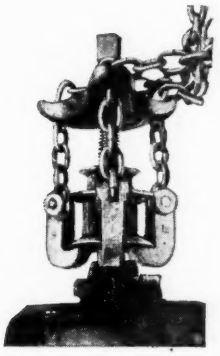
N-R-M Tire Drums

THE National tire building drums are guaranteed against all service expense for one year. They are of balanced design and rugged in construction and are well fitted to fulfill the utmost demands of precision and production. National Rubber Machinery Co., Akron, O.

Universal Gear and Wheel Puller

A PULLER is here pictured for removal of large or small gears, wheels, or pulleys, whether close up or distant from the end of the shaft. These pullers are built in 2 sizes with pulling capacities of 12,000 or 36,000 points respectively.

The chief advantage claimed for this new tool is its universality, the range of work it will handle. Consisting of a heavy bracket with large pulling screw and 3 chains of almost any length, it will handle work at any distance from the end of the shaft. These chains are double ended, with standard chain hooks for gripping around spoked wheels or large gears on one end and special hooks that take a close grip for bushings, small gears, motor pulleys, or in close quarters. Armstrong-Bray & Co., 308-310 Sheldon St., Chicago, Ill.

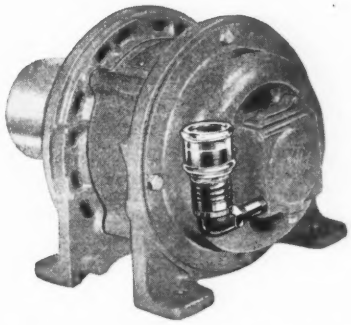


Steelgrip Universal Gear and Wheel Puller

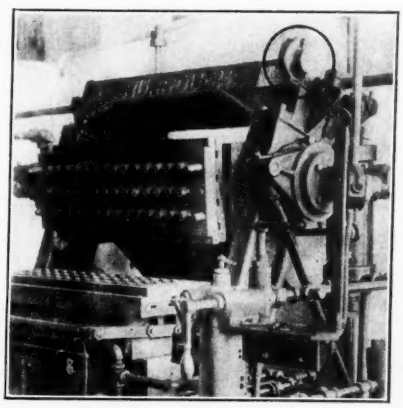
Automatic Oilers

NEW oilers of 2 types, "Constant Level" and "Thermal," have been recently announced. The first, shown herewith, is designed especially for use on electric motor bearings and other reservoir bearings with oil-ring, packing, or ball or roller bearings where oil in the reservoir should be maintained at a determined level. This work is done by a tube which permits air to enter and oil to flow from the reservoir when the level of oil in the bearing reservoir drops below the fixed and proper level, automatically stopping the flow of oil when this level is attained.

The "Thermal" oilers, designed for use on sleeve bearings of the open type, are operated wholly by change in the bearing temperature. The main oil supply is held in a glass bottle, from which it flows as needed to the thermal chamber. Any slight rise in temperature of the bearing is communicated to the air imprisoned in the thermal, which expands, forcing oil out of a small opening. The ratio of air and oil in the thermal chamber is always the same, thus insuring uniform operation. Speed-Way Mfg. Co., 1834 S. 52nd Ave., Cicero, Ill.



Speed Way Type A Constant Level Oiler



Service Recorder on a Molding Press

Timing Molding Presses

A DEVICE that serves as a time clock for machinery is a simple pendulum-operated instrument, the alternate tilting of which, registering on a time chart, records the periods of activity and idleness of the machine to which it is attached. Applied to a rubber press this gives a record of the exact length of the cure. The mechanism and chart of this recorder is contained within a casing having a locked cover.

In the illustration it is shown within a black circle as attached to a book-opening press equipped for molding lamp sockets. The pendulum of the instrument is not a clock pendulum, but is merely used to supply motion to a stylus which it carries. Any motion that will move the pendulum in any way will move the stylus and make a record. The chart is constantly turned at clock speed by a timing mechanism, but the stylus marks the chart only during the time when the pendulum is put in motion by the working activity of the machinery to which the recorder is attached.

The tilting of the recorder gives a sort of Roman key-record that shows clearly the operations of the press or other machine.

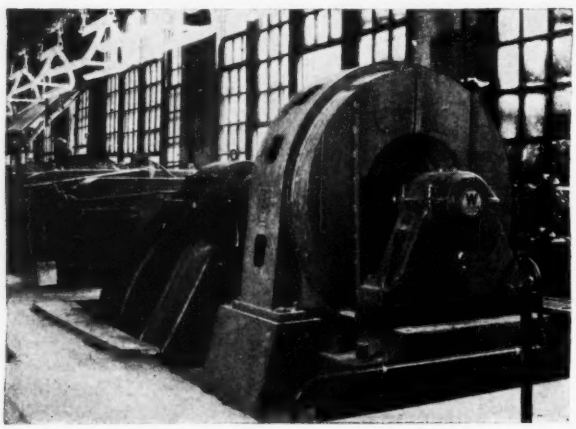
So much depends on accurate timing in the rubber industry that this recorder is considered a great safeguard in keeping tabs on machine operations. The Service Recorder Co., 468 Hanna Bldg., Cleveland, O.

Quick-Stopping Mill Motor

THE latest accomplishment in electrical operation of rubber mills is the construction of a quick-stopping motor of 1,000 h.p. to drive through gears a number of pairs of mill rolls each 7 feet long and more than 2 feet in diameter. The rotating element of this powerful motor weighs over 3 tons and turns with a speed of 514 r.p.m. The energy required to stop this rotating mass is sufficient to lift a modern passenger elevator loaded with 12 persons to a height of 24 stories. The new motor is the largest ever built for such quick stopping and will be installed in the plant of The Goodyear Tire & Rubber Co., Akron, O.

The plastic crude rubber is drawn between the mill rolls at a speed of 19 inches a second. By stopping the driving motor in 3½ revolutions, the rolls travel only 9 inches after the current is shut off. The stopping switch is a continuous strip, shoulder high and running the length of the mill. A worker need only touch the switch with his head, shoulder, or free arm to stop the mill.

Dynamic or electrical braking is the secret of the motor's ability to stop quickly. When the stop switch is touched, the motor windings are closed through resistance grids where the electrical energy stored in the rotating mass is dissipated in the form of heat. Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

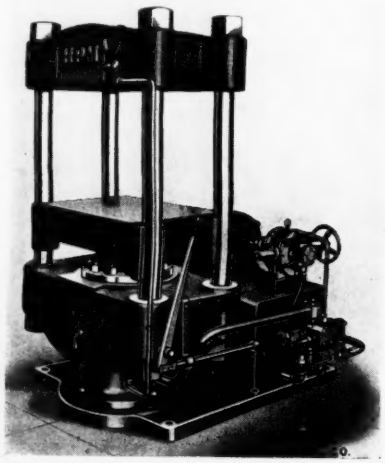


Westinghouse 1,000 H.P. Synchronous Motor

Compact Hydraulic Press

THE new type of hydraulic presses here illustrated comprises the regulation upward-acting type of press frame with individual hydraulic power plant forming a compactly self-contained motorized machine. The operating pressure unit consists of a variable delivery radial pump with direct connected electric motor mounted together on a base enclosed for containing the oil used as pressure fluid and lubricant. This unit can be mounted in any convenient location adjacent to the press at the side or rear. The power and the speed are subject to close automatic regulation.

Among the advantages attending this press installation over the conventional type operated from a central accumulator system are savings in installation cost and in floor space and freedom as to location. The press is available in 10 different pressure capacities from 25 to 500 tons, each with square or open-side platens. The Hydraulic Press Mfg. Co., Mt. Gilead, O.



Self-Contained Hydraulic Press

Automatic Stock Racks

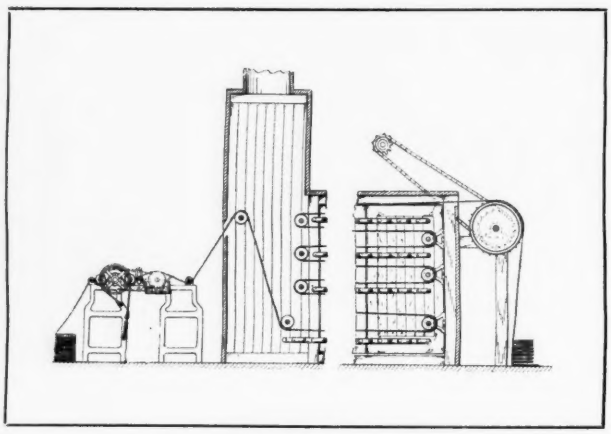
EQUIPMENT for cooling and storing freshly mixed rubber stock is very important for preventing damage to the material from scorching and contamination by foreign substances. This company's automatic rack has special advantages in that it is easily and quickly used and more efficient as it provides greater cooling capacity for a given space.

All the shelves in the rack are automatically raised at one time by turning the large crank. They are held in this position by turning the small crank. The shelves are loaded from the bottom up by moving the small crank, which automatically releases a single shelf at a time to be loaded. The slab of stock is laid upon the shelf with its end overhanging the shelf a few inches to facilitate its removal when wanted. If desired, the shelves can be manually raised or lowered with the left hand, and each shelf locked or unlocked with the right hand by means of the small crank. It will be noted that this rack is mounted on legs that admit of the loaded rack being picked up by a lift truck and moved about. F. Spindel & Co., P. O. Box 195, Trenton, N. J.

Latex Carpet Coating Machine

COATING the back of carpeting with sizing is common practice in finishing the goods. A patented apparatus for similarly applying a coating of latex[1] is here illustrated. As shown, a strip of carpet enters over a guide roller; thence it passes under a tension roller, over a drag roller, and under a second tension roller, and onward over a latex coating roller which dips into a trough containing the latex or other liquid coating material. A doctor blade regulates the amount to be carried by the roller to the carpet.

On leaving the coating roller, any surplus material is removed by an adjustable scraper, and the goods pass on into a drying chamber which they traverse back and forth several times, thence out at the opposite end over a delivery roller at the top of the chamber on the outside. The power is transmitted from this delivery roller by the carpet to the drag roller. These 2 rollers are spiked to insure driving contact with the back of the carpet. As the coating material has not been applied at the time of contact with the drag roller and has been dried at the time of contact with the delivery roller, the spikes will not carry the coating material through the carpet into the face yarn.



Latex Carpet Coating Machine

[1] U. S. Patent No. 1,909,482, May 16, 1933.

New Goods and Specialties

Improved Rubber Galosh

REALIZING that a tremendously large number of women are most careful and particular of their costume and are willing to pay even extra to secure exactly what they want, The B. F. Goodrich Footwear Corp., Watertown, Mass., has featured Shuglovs, its all-rubber galoshes, for several seasons on a high plane of style, quality, and price. This past season, recognizing the importance of building into the line of Shuglovs even more appeal than ever before to make them salable under present economic conditions, Goodrich introduced an entirely new type of Shu-

Shuglov Made from Textran Process

glov. To build as much eye appeal as possible in this merchandise, the company developed the patented Textran Process which perfectly reproduces leather effects in rubber. The success of this process is best shown by the overshoe that is pictured in the accompanying illustration.

The Goodrich policy on stormy weather footwear is to be continued for the Fall and Winter season of 1933, and another line of Shuglovs made by the Textran Process has already been introduced on the market. These new models accurately simulate lizard, sharkskin, kid, etc. Just one manufacturing touch, which has been an excellent sales feature and which has also given the consumer what she wanted, is the removal of the rubber smell and the substitution of a scent that is quite pleasing.

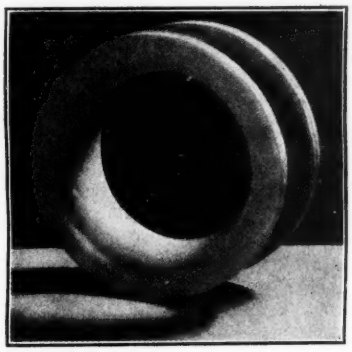
NRA Balloons

THE OAK RUBBER CO., Ravenna, O., has been authorized by the National Recovery Administration to supply balloons featuring the NRA emblem to those entitled to its use. This new balloon, shown in the illustration, is printed in one color on an assortment of solid backgrounds to produce a very pleasing effect.

These balloons offer a very attractive and forceful way of publicizing participation in the President's recovery program. Orders for them must be accompanied by a signed statement declaring that the President's Reemployment Agreement and the Certificate of Compliance have been signed and that the writer, therefore, is authorized to

Flaunting the Blue Eagle

use the NRA insignia. Such a statement must bear the official NRA sticker.



Parock Pot Eye

Unbreakable Pot Eyes

POT eyes are virtually large hard rubber grommets used by dyers through which to draw fabrics in or out of their tanks of bleach or dye liquor. A specially compounded and unbreakable material known as "Parock" has been developed for this service. The material takes a high polish, which it retains permanently. Pot eyes made of Parock wear indefinitely, do not oxidize or deteriorate with age, and are unaffected by dyeing or bleaching solutions. They are made in tan in all sizes from 2½ to 15 inches in diameter. Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.

Hard Rubber Battery Cover

THE "Electro-Pak," an automobile storage battery of distinctive and new design, is announced by The B. F. Goodrich Co., Akron, O. Manufactured in sizes for all popular makes of cars, the battery unit is entirely encased in a hard rubber protective cover of modernistic design. This is the first time this type of construction has been used on an American made battery, the manufacturer states.

With all the formerly exposed metal parts of the battery completely covered, the exclusive new cover protects against dirt, acid fumes, surface moisture, and metal dropping across the

"Electro-Pak"

terminals, thus preventing short circuits and greatly reducing corrosion and power leakage, deadly enemies to battery life.

The "Electro-Pak" is serviced, when replacement of water is needed, without removing the protective cover. The case is sturdily built with uniform wall thickness throughout, unlike other battery case construction. Constructed internally of heavy, full capacity plates, many innovations have been incorporated to give the battery greater power and longer life. A series of record tests showed exceptionally low operating costs for this new product.

A list of advantages claimed by the manufacturer for the "Electro-Pak" follow: high resistance to shorts; great reduction of corrosion and power leakage; sturdier construction; better appearance; greater power; longer life; distinctive design; protective cover; hard rubber case of uniform thickness; convenient hand grips; scientific adapter with larger condensation chamber; full-size intercell connecters and posts; full-size plates with rounded edges and corners; Port Orford cedar separators and Positive Plate Protectors, an exclusive "Electro-Pak" feature.

Rubber Industry in America

OHIO

W. H. Urquhart

The Goodyear Tire & Rubber Co., Akron, has named W. H. Urquhart consulting engineer to succeed the late W. C. State. Mr. Urquhart, born in Cleveland in 1882 and graduated from Case School of Applied Science, joined the Goodyear engineering department in Akron in 1905. He had charge of constructing the company's Los Angeles, Calif., factory in 1920 and remained there as manager of engineering until 1927 when he went to direct construction of the Goodyear factory at Granville, Australia, where he stayed as general superintendent until his recent appointment.

Goodyear has been charged by the federal trade commission with having violated the Clayton anti-trust act in its Sears, Roebuck & Co. contract.

C. R. Quine, of The Akron Equipment Co., Akron, reports that all 14 machine shops in the Akron district have joined the Special Tool, Die & Machine Shop Institute, a national association with headquarters at 7016 Euclid Ave., Cleveland. The Chicago mold makers have also united with this group. The Institute's code has passed its preliminary hearings and will have its final public hearing some time this month.

The Aetna Rubber Co., Ashtabula, through President S. T. Campbell has announced the reopening of its Cleveland plant, idle for the past 3 years, to serve more efficiently its Cleveland and Detroit customers. Some of the advantages of conducting all manufacturing operations at Ashtabula have ceased to exist since the adoption of the NRA code since production costs in Ashtabula are equalized with those in Cleveland; while the disadvantage of increased charges for transportation still remains. Transfer of operations from Ashtabula to Cleveland is under way now, but the executive offices of the company will remain in Ashtabula.

New Officers, Rubber Section, N. S. C.

The following Executive Committee of the Rubber Section, National Safety Council, were elected to serve during the ensuing year.

General Chairman, H. W. Low, Miller Rubber Products Co., Inc., Akron, O.

Vice Chairman in Charge of Program, B. F. Gerpheide, The Goodyear Tire & Rubber Co., Akron.

Secretary, A. M. Dietz, Pennsylvania Rubber Co., Jeannette, Pa.

News Letter Editor, R. A. Bullock, Corduroy Rubber Co., Grand Rapids, Mich.

Engineering Committee Chairman, W. L. Schneider, The B. F. Goodrich Co., Akron.

Health Committee, Dr. W. S. Ash, United States Rubber Co., Detroit, Mich., and Dr. J. Newton Shirley, Hood Rubber Co., Inc., Watertown, Mass.

Membership Committee Chairman, E. W. Beck, United States Rubber Co., New York, N. Y.

Poster Committee Chairman, Oliver Hopkins, National India Rubber Co., Providence, R. I.

Publicity Committee Chairman, R. W. Morse, The Firestone Tire & Rubber Co., Akron.

Statistics Committee Chairman, John J. Loge, The General Tire & Rubber Co., Akron.

Slides and Safety Kinks Committee Chairman, H. A. Walker, Goodyear.

Members at Large, C. F. Horan, Hood company; J. T. Kidney, Goodyear; M. A. Quirk, Samson Tire & Rubber Co., Los Angeles, Calif.; and Charles F. Smith, U. S. Rubber Reclaiming Co., Inc., Buffalo, N. Y.

The Continental Rubber Works, Erie, Pa., which has a western branch under the management of W. R. Knowles, has moved its Chicago headquarters from 27 W. Illinois St. to 26 W. Austin Ave. An approximate doubling of space permits carrying a large stock of industrial and mechanical rubber goods.

MIDWEST

American Cyanamid & Chemical Corp., 535 Fifth Ave., New York, N. Y., has announced the opening of an office in the New Center Bldg., Detroit, Mich., in charge of George S. Horsfull, resident representative.

Judsen Rubber Works, Inc., 4101-4111 W. Kinzie St., Chicago, Ill., has appointed Joseph L. Brand its eastern representative, with headquarters in New York, N. Y. The firm also reports that several new items marketed under its own name are finding wide favor, and a brisk demand has come from customers in the automotive and sporting goods fields and from lines where molded rubber is a part of the manufactured product. Company officers include Carl A. Judsen, president; Leroy Goldstone, secretary-treasurer; and Carl Judsen, Jr., vice president.

The Falk Corp., Milwaukee, Wis., manufacturer of transmission machinery, through Sales Promotion Manager M. A. Carpenter has announced the appointment of T. F. Scannell, for several years St. Louis, Mo., representative, to the Dallas, Tex., territory where he will have charge of oil field sales in Texas and Oklahoma, with headquarters at 1410 Magnolia Bldg., Dallas. The St. Louis district has been assigned to Fitch S. Bosworth, 5475 Cabanne Ave. Officers of The Falk Corp. include Herman W. Falk, president; Otto H. Falk, vice president; Clarence R. Falk, secretary-treasurer; and Harold S. Falk, vice president and works manager.

Akron Beacon Journal

The Proverb Maker Was Right

EASTERN AND SOUTHERN

Rubber Industry Codes

Revised Tire Code

The rubber tire industry filed on October 2 with the National Recovery Administration a revised code of fair competition, which provides that the code authority shall consist of 11 members, not more than 3 of whom (without vote) shall be representatives of the National Recovery Administration and appointed by the President, and 8 of whom shall be selected by the industry according to such rules as it may determine, provided that no 2 members of the code authority shall be affiliated with any single member of the industry.

The following constitute the 8 industry members and alternates of the code authority.

William H. Lalley, Kelly-Springfield Tire Co.; H. S. Firestone, Firestone Tire & Rubber Co.; P. W. Litchfield, Goodyear Tire & Rubber Co.; William O'Neil, General Tire & Rubber Co.; James D. Tew, B. F. Goodrich Co.; Charles Borland, Mohawk Rubber Co.; C. C. Gates, Gates Rubber Co.; Ervin Eisbrouch, McClaren Rubber Co.

Alternates are: A. A. Garthwaite, Lee Rubber & Tire Corp.; F. B. Davis, United States Rubber Co.; F. A. Seiberling, Seiberling Rubber Co.; J. A. Walsh, Armstrong Rubber Co.; W. O. Rutherford, Pennsylvania Rubber Co.; J. A. MacMillan, Dayton Rubber Co.; G. W. Stephens, Mansfield Tire & Rubber Co.; J. W. Whitehead, Norwalk Tire & Rubber Co.

The hours of labor and wage provision are substantially the same in the revised code as in the original code submitted, except, that in the new code employes are permitted to work a total of 104 hours per year in excess of the maximum hours, whereas the original code permitted employes to work 124 hours over the annual average to provide for peak production demands.

L. D. Tompkins, vice president of the United States Rubber Co., 1790 Broadway, New York, N. Y., was appointed industrial adviser for the tire industry in handling codes. Mr. Tompkins, who is a member of the NRA policy board, will act as adviser to Col. R. W. Lea, assistant NRA administrator, in handling technical problems concerning the operation of the industry during the rubber code hearings in Washington, D. C. The U. S. Rubber executive has been granted leave of absence from the company with which he has been associated since 1916.

Rubber Manufacturing Code (Except Tires)

The proposed code fixes the basic maximum work week at 40 hours, not more than 8 hours in any one day; provided that employes may be permitted to work 80 hours per year in excess of the maximum hours. Maintenance crews and outside classifications are not included in the foregoing limitations, but are permitted to work 45 hours per week maximum except in emergencies. For clerical employes except outside salesmen the maximum is 48 hours in any one week. Salaried employes in any executive, clerical, technical, or supervisory positions, receiving more than $30 a week, and outside salesmen are not subject to the hours limitations. The code also provides for a minimum wage of $14 per week or 35¢ an hour for employes working on an hourly basis, except for apprentices during 6 weeks, 28¢ an hour; for salaried employes, except salesmen, office boys and girls, and clerical apprentices, $15 a week in cities of over 500,000 population, scaled down to $12 a week in towns of less than 2,500 population.

The code is divided into the following divisions: Automobile Fabrics, Proofers, and Backers; Flooring; Footwear; Hard Rubber; Heel and Sole; Mechanical Rubber Goods; Sponge Rubber; Sundries; and Rainwear.

Emil Schlesinger and Dr. A. Howard Myers have been appointed labor advisers on the rubber industry codes.

Reemployment Agreement Modified

Abstract of the President's executive order, issued October 2, modifying the NRA agreement of July 20, 1933, follows: " . . . do order that, for the purpose of its signature by employers on and after October 1, 1933, the form of the President's Reemployment Agreement, ... be ..... modified so that paragraph ..... shall read as follows:

"Not to employ any factory or mechanical worker or artisan more than a maximum week of 35 hours until December 31, 1933; and not to employ any worker more than 8 hours in any one day.

"Provided, that in all other respects the form of the said agreement shall remain unmodified, and provided further, that nothing herein contained shall be construed as in any way modifying or affecting any such agreement signed by any employer prior to October 1, 1933."

United States Treasury Department, Washington, D. C., after about a year of investigations and hearings, on September 19 issued anti-dumping orders against several products, including rubber-soled fabric-topped footwear from Japan. Acting Secretary Acheson found that these goods were being sold in this country "at less than a fair value" and that domestic manufacturers, therefore, were "being or likely to be injured." Consequently an anti-dumping duty will be assessed against the products sufficient to bring their sale price here to what is considered a fair value. Many other recommendations concerning anti-dumping orders are pending in the Treasury Department, including one on rubber-soled footwear from Czechoslovakia.

A. S. T. M. Tentative Specifications

Three proposed standard methods of testing rubber products and revisions in 2 specifications have been approved for publication as tentative by the American Society for Testing Materials, Philadelphia, Pa. The testing methods cover rubber belting used for power transmission and rubber hose of wrapped and braided construction. The specifications in which revisions were tentatively approved cover insulated wire and cable: 30% Hevea rubber (D 27—31 T) and wire and cable: performance rubber compound (D 353—32 T).

The methods of testing wrapped hose and braided hose were prepared by Committee D-11 following its policy of first standardizing methods of test used for rubber products before sponsoring detailed product specifications of the materials type. It is felt that test methods for evaluating rubber products require further standardization before satisfactory product specifications can be written. As far as possible the committee will develop and include tests of the performance type. The standard specifications for wrapped hose and for braided hose were withdrawn.

The specifications for rubber belting for power transmission were withdrawn several years ago. The committee submitted the methods of test and a classification of the various types of transmission belting in partial replacement of these specifications.

The revisions in the insulated wire and cable specifications include a new section on cotton braids to replace the existing section on braids, the substitution of the former table on width and over-lap of rubber-filled cable tape which had appeared in the specifications in 1928, a rearrangement of certain material between the specifications, and other minor changes.

Committee D-11 is forming 2 new subcommittees, one on Adhesion Testing for Rubber Products, under the chairmanship of J. J. Allen, chief chemist, Mechanical Rubber Goods Division, Firestone Tire & Rubber Co.; and another on Tests for Volume Increase of Rubber in Liquids, chairman, O. M. Hayden, manager, Rubber Laboratory, Dyestuffs Department, E. I. du Pont de Nemours & Co. The first group will develop test methods for measuring the adhesive strength of rubber to metal, since this problem is of particular importance in the rubber and automotive industries.

The second subcommittee will concentrate its activities on the development of suitable tests for comparing the swelling properties of rubber compounds to be subjected to the action of oils or various solvents.

The J. M. Huber Co. of La., Inc., carbon black producing subsidiary of

J. M. Huber, Inc., 460 W. 34th St., New York, N. Y., recently took over the operation of the Skellytown factory of the Magnolia Petroleum Co. The plant was shut down some time for repairs and alterations. It is now in operation producing Specification Black under the control system used at the other Huber factories at Borger, Tex., Swartz, La., and Lance Creek, Wyo.

The Pennsylvania Rubber Co. of America, Inc., Jeannette, Pa., recently completed a motion picture showing the entire operation of its factory. This is really an industrial super-production displaying in actual operation the manufacture of tubes and tires, tennis balls, bicycle tires, and play balls. On October 3 the Kiwanis Club of Jeannette saw a preview. Advertising Manager J. C. Rutherford commented upon interesting features in it. President W. O. Rutherford and Vice President A. C. Bowers, of the Pennsylvania company, also were present. Plans are underway to make it possible for tire dealers all over the country to see this picture.

Hewitt-Gutta Percha Rubber Corp., Buffalo, N. Y., manufacturer of a complete line of mechanical rubber goods and packings, recently changed its name to Hewitt Rubber Corp. Officers of the company are Thomas Robins, chairman of the board; Thomas Matchett, president; Thomas Robins, Jr., vice president and general manager; F. E. Miller, vice president; E. K. Twombly, treasurer; F. G. Cooban, secretary; and Fred Unger, assistant secretary-treasurer. Company trade names include Maltese Cross, Monarch, Sagamore, Saturn, Wallabout, Ajax, and Mohawk. The present corporation includes the Hewitt Rubber Co., which in 1926 purchased the old Gutta Percha & Rubber Co., Brooklyn, N. Y., and the Metric Packing Co., Buffalo, purchased in 1927. Both these old firms have completely lost their individual identities since the time of their acquisition.

Pierre de Lussigny, representative of the S. E. A. C. I., manufacturers' agent and jobber for France and Belgium, 36 Rue Laborde, Paris, recently visited this country and surveyed the American sporting goods trade to open foreign agencies for such manufacturers. While here he concluded arrangements with the International Latex Corp., Rochester, N. Y., on its Lifetex bathing caps. During his stay in this country Mr. de Lussigny made his New York, N. Y., headquarters at the International Latex Corp.'s offices at 261 Fifth Ave., where the concern's sales manager, Ted Golding, may be found.

United States Rubber Co., 1790 Broadway, New York, N. Y., according to L. M. Simpson, general sales manager, tire department, has appointed J. C. Ray manager of the automobile tire department, dealer sales. Mr. Ray formerly was manager of the regional office in Chicago, Ill., but his headquarters now are at New York.

Lee Tire & Rubber Co., Conshohocken, Pa., through Advertising Manager George H. Duck has announced that owing to the death of O. F. Schaeffer, branch manager at Atlanta, Ga., O. C. Alexander, assistant to E. L. Duffee, Columbus, O., branch manager, has been appointed special representative for the Atlanta wholesale area. A. H. Uhl, in charge of the inside operation of the Atlanta branch, will in addition become the active retail manager. Lee of Conshohocken is building an addition to its mill and compound room to allow the installation of a new 84-inch mill line. On October 23 the Washington, D. C., branch was moved from 1629 14th St., N.W., to 627-629 K St., N.W.

William B. Leake, recently made manager of the Goodrich Silvertown, Inc., retail store of The B. F. Goodrich Rubber Co., in West Palm Beach, Fla., has had wide experience in the tire industry, with which he has been affiliated since 1916. Joining the Goodrich company as a truck and bus tire salesman at Miami, July 1, 1926, he was transferred to Jacksonville, Fla., in the sales department a year later and remained there until March 1 of this year, when he was assigned to the Atlanta, Ga., district offices of Goodrich. His promotion to the West Palm Beach store managership was announced by S. B. Robertson, Goodrich vice president.

Vansul, Inc., 110 Broad St., New York, N. Y., manufacturer and distributer of rubber colors, recently added to its products a series of colors for printing on rubber goods by means of engraved rollers. The colors include metallic effects in silver and gold. The firm also announced that W. T. Ashley, long a dealer in rubber substitutes, 683 Atlantic Ave., Boston, Mass., now acts as its representative in the New England territory.

M. Pancorbo, scrap rubber exporter, 155 John St., New York, N. Y., also supplies materials for making soles and heels from scrap rubber.

Ernest Wiener, 220 Fifth Ave., New York, N. Y., represents a number of leading German rubber goods manufacturers, including Atlantic Rubber Works, Cologne; Phoenix Rubber Works, Harburg; and Weidemeyer & Co., Cassel. They make everything in soft, hard, and pure rubber for surgical, technical, and industrial purposes.

Fenner, Beane & Ungerleider, members of the leading exchanges, have moved from the New York Cotton Exchange Bldg., 60 Beaver St., to the International Telephone & Telegraph Bldg., 67 Broad St., New York, N. Y.

Kastar Specialty Mfg. Co., Inc., manufacturer of tools and specialties, 141-145 W. 17th St., New York, N. Y., lists among its rubber products Universal, slip-on, combination slip-on, and accelerator pedal pads; hood silencers and corner guards; E-Z-On air cushion and Kwik-On double action door silencers; pneumatic door cushions.

NEW JERSEY

Production in the New Jersey rubber plants remains unchanged except for a few factories where it has dropped off a little. The hard rubber situation shows improvement in some sections, with one concern building additions to take care of increased work. Firms supplying the automotive trade continue busy.

Rubber Manufacturers' Association of New Jersey on October 17 held its annual dinner and outing at Longacres Country Club, Trenton. Members from various rubber companies attended.

Joseph Stokes Rubber Co., Trenton, is further enlarging its plant. A new 2-story brick building, 80 by 120 feet, will be added to the main plant; while the shipping and storage departments will also be enlarged. Stokes recently completed a manufacturing building, 60 by 100 feet, at a cost of $7,500.

Murray Rubber Co., Trenton, reports unchanged business and normal operations.

Miah Marcus, president of the Puritan Rubber Co., Trenton, during a western trip visited the Century of Progress at Chicago, Ill.

Bevis Longstreth, president of the Thiokol Corp., Yardville, was on a 2 weeks' business trip through the Far West.

Thermoid Co., Trenton, continuing its 3 shifts, has many orders on hand for all kinds of mechanical goods and automotive supplies.

Acme Rubber Mfg. Co., Trenton, reports that business, while slowing up a little, is much better than it was this time last year. The company expects improved business after November 1. The Acme superintendent, J. Edward Myers, was appointed to the Trenton NRA Compliance Board to represent the manufacturing members.

Essex Rubber Co., Trenton, which has been operating with 2 shifts during the summer, continues busy. Secretary Arthur E. Moon recently celebrated his sixty-first birthday at his home near Yardley, Pa.

Harry L. Fisher, of the General Laboratories of the United States Rubber Co., Passaic, on October 18, at Wilmington, addressed the Delaware Section of the American Chemical Society on "True Stories of Some Rubber Inventions."

PACIFIC COAST

Firestone Tire & Rubber Co., Akron, has sent General Superintendent Clyde L. Smith to its Los Angeles, Calif., plant where he becomes factory manager of both the tire and the battery factories. Mr. Smith, who joined the company in 1911, has served as foreman, general foreman, production superintendent, and plant manager of the Akron plant 2.

L. A. Rubber & Asbestos Works, Inc., manufacturer and distributer of mechanical rubber goods and asbestos

(*Continued on page* 50)

OBITUARY

General Director, Etablissements Hutchinson

IN ANNOUNCING the death of Ernest Ducas, general director of Etablissements Hutchinson, we report the loss of a well-known figure in the French rubber industry. He was born in Paris, September 11, 1862, and studied first at the Lycee Condorcet and then at the Faculte de Droit, before being admitted to the practice of law in an attorney's office.

His connection with the rubber industry dates from 1898, when he helped to found the S. A. Etablissements Hutchinson and became one of its directors. The commercial side of the business and more especially the development of foreign outlets were his chief concern, and thanks to his policy, affiliated companies were established in Germany, Italy, and Spain, while branches or agencies were developed in most of the other European countries.

M. Ducas was a director of Etablissements Degrave & Prouvost and of Etablissements Bognier & Burnet, as well as president of the tire section of the Syndicat du Caoutchouc. In recognition of his services he was created Chevalier of the Legion d'Honneur in 1911 and promoted to officer in 1927.

Chief Chemist

AFTER a year's illness James P. Millwood, chief chemist of The Okonite Co., manufacturer of insulated wires and cables and electrical accessories, Passaic, N. J., since 1915, died at his home on September 24. He was recognized throughout the wire and cable industry as one of the leading authorities on technical matters.

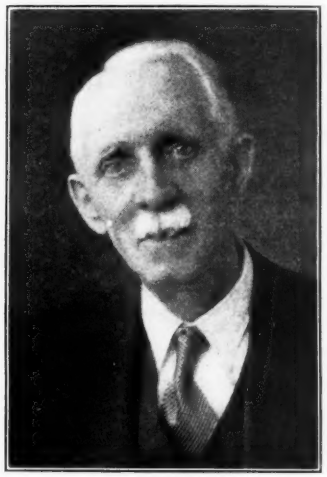
The deceased was born in Queenstown, Ireland, July 4, 1869. He attended private school and St. Calman's College.

In 1886 Mr. Millwood joined W. & H. M. Goulding, Ltd., manufacturing chemist, Cork, and remained there 5 years. He passed the Irish Pharmaceutical Society examinations in 1887 and later attended Queen's College, Cork, for 2 years. His degree as pharmaceutical chemist was conferred upon him in 1890.

He came to the United States in March, 1891, and after 4 years, with a brother founded the Pulvolco Chemical Co., manufacturer of bleaching and fabric waterproofing preparations.

The United States Naval Laboratory engaged Mr. Millwood's services in 1896, and 5 years later he won a civil service appointment as chief chemist of the Brooklyn Navy Yard. Since then he was consulted by many railroad, state, and municipal officials on the purchase and inspection of rubber goods, especially insulated wire.

He belonged to the American Institute of Chemical Engineers, American Chemical Society, American Society for Testing Materials, Passaic Rotary Club, Holy Name Society, and Knights of Columbus, of which he was a Fourth Degree member.



James P. Millwood

A solemn high requiem Mass was held at St. Nicholas' Church on September 27. Interment was in Calvary Cemetery, Paterson.

Surviving are Mrs. Millwood, a son, 2 daughters, and 7 grandchildren.

Prominent Executive

THE New Jersey rubber industry lost a valuable figure when a sudden heart attack on September 28 caused the death of I. Ely Reed, treasurer of the Mercer Rubber Co., Hamilton Square, N. J., which he joined July 1, 1888, holding many important positions, to become treasurer in 1922. He was also president of the First National Bank of Hamilton Square, vice president of the New Jersey Rubber Manufacturers' Association, general manager of Hamilton Square Water Co., and president of the Sinking Fund Commission of Hamilton Township.

I. Ely Reed

Mr. Reed was born August 1, 1868, in Freehold, N. J. He attended the local public school and Stewart Moore Business College, graduating from the latter in 1888.

He belonged to Column Lodge, No. 120, F. & A. M.; Ancient Accepted Scottish Rite; Crescent Temple, A.A.O.N.M.S.; Eureka Council No. 54, Jr. O.U.A.M.; I.O.O.F. No. 97; Union League Club of Philadelphia; Harvey Cedars Outing Club; and Hopewell Valley and Seaview golf clubs. He was fond of golf and yachting. For many years also he was an active member of the First Presbyterian Church in Hamilton Square.

Surviving are his widow; a daughter; and 2 sons.

Interment was in Greenwood Cemetery, Trenton.

Veteran Rubber Man

CHARLES R. SCHERMERHORN, 79, of New Hope, Pa., died September 25. Until his retirement a few years ago he had been employed by the Lambertville Rubber Co., Lambertville, N. J., for 50 years. He belonged to the National Union. Surviving are 2 daughters. Burial was at Lambertville.

Former Salesman

FRANK WHITEHEAD, 69, of Yardville Heights, N. J., committed suicide late in September, having become despondent through prolonged illness. Mr. Whitehead was formerly a salesman for the Whitehead Brothers Rubber Co., Trenton, N. J., which concern was founded many years ago by members of his family. His widow survives. Burial was in Riverview Cemetery, Trenton.

Plant Superintendent

SAMUEL S. WILSON, plant superintendent of the Jos. Stokes Rubber Co., Ltd., Welland, Ont., Canada, died on October 21.

United Carbon Executive

AFTER an illness of several months Frederik Engstrom, chief chemist and consulting engineer for the United Carbon Co., died at his home in Charleston, S. C., on October 6.

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MANUFACTURE OF COTTON RUBBER-LINED FIRE HOSE. H. R. Mauersberger, *Melliand Textile Monthly*, Oct., 1933, pp. 207-209. (Concluded from Aug.-Sept. issue, p. 159.)

DISPERSION OF RUBBER IN GASOLINE. T. Fujiwara and T. Noguchi, *J. Soc. Chem. Ind. (Japan)*, 1933, 36, pp. 237-40B.

METHOD OF CALCULATING THE SIZE OF SQUARE RUBBER THREAD. W. Bertram, *Melliand Textile Monthly*, Oct., 1933, pp. 196-97.

CHLORINATED RUBBER AND ITS USE IN VARNISH. K. Kojima and Y. Toyabe, *J. Soc. Chem. Ind. (Japan)*, 1933, 36, pp. 236-37B.

EFFECT OF TEMPERATURE ON TENSILE PROPERTIES OF VULCANIZED RUBBER. A. A. Somerville and W. F. Russell, *Ind. Eng. Chem.*, Oct., 1933, pp. 1096-1101.

DISPERSIBILITY OF GAS BLACK. H. F. K. Schoenfeld and R. P. Allen, *Ind. Eng. Chem.*, Oct., 1933, pp. 1102-106.

MECHANISM OF RUBBER AGING. B. L. Johnson and F. K. Cameron, *Ind. Eng. Chem.*, Oct., 1933, pp. 1151-52.

Book Reviews

"A. S. T. M. Standards on Textile Materials." Prepared by Committee D-13 on Textile Materials. Specifications, Tolerances, Methods of Testing, Definition and Terms, September, 1933. Published by American Society for Testing Materials, Philadelphia, Pa. (A Reprint from Copyrighted Society Publications.) Paper Covers, 164 pages, 6 by 9 inches, Price $1.

This publication contains all of the 30 standard and tentative specifications, methods of testing, and definitions pertaining to textile materials, which have been issued by the A. S. T. M., through the work of its Committee D-13 on Textile Materials. This is the first compilation of A. S. T. M. standards covering these materials since 1930. Many new standards have been issued since the appearance of the earlier publication; so the present edition should be of much convenience to those dealing with textile materials.

In addition to the standards the book includes a psychrometric relative humidity table which combines accuracy and convenience; photomicrographs of common textile fibers; and a proposed potassium dichromate oxidation method for the determination of total iron in asbestos textiles.

"Chemical Engineering Catalog." Eighteenth Annual Ed., 1933. Published by The Chemical Catalog Co., Inc., 330 W. 42nd St., New York, N. Y. Cloth, 789 pages, 9 by 12 inches. Illustrated.

The latest edition of this standard reference work contains authoritative data regarding the products of several hundred American concerns manufacturing engineering equipment and supplies for the chemical and related industries including rubber. The volume comprises the following sections: Alphabetical Index, Trade Name Index, Classified Index of Equipment and Supplies, Equipment and Supplies Section, Classified Index of Chemicals and Raw Materials, Chemicals and Raw Materials Section, and Technical and Scientific Books Section.

New Publications

The Vanderbilt News. R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y. The September-October, 1933, issue of this publication is devoted entirely to an extensive research entitled "The Effect of Temperature on the Tensile Properties of Vulcanized Rubber," being an enlargement of a paper by Somerville and Russell given at the Chicago Meeting of the American Chemical Society, Rubber Division, September 12, 1933.

"Zinc Oxide in Rubber." The New Jersey Zinc Co., 160 Front St., New York, N. Y. The earliest reference to zinc oxide in rubber is found in United States patent No. 6,066, July 30, 1849, copy of which is reproduced in this booklet. Reference is also made to the production of American and French process zinc oxide and the introduction of Kadox, a colloidal zinc oxide manufactured by the Palmerton process. A series of 2 dozen graphs shows the relative effects of fast and slow curing zinc oxide with leading accelerators employed in the industry and supply the compounder much valuable help.

"Factice in Rubber Compounding." The Stamford Rubber Supply Co., Stamford, Conn. This pamphlet of 14 pages contains important information for the rubber goods manufacturer concerning the qualities of factice, their characteristics, rubber compounding uses, and value in proofing, wringer rolls, sponge rubber, electrical insulation, molded rubber goods, and in DuPrene stocks. New products in factice development are mentioned for use with ultra-accelerators and for latex compounding.

"Farrel Gearflex Couplings." Farrel-Birmingham Co., Inc., 437 Vulcan St., Buffalo, N. Y. Gearflex couplings of double and single designs are illustrated and described in this pamphlet, Bulletin No. 437. Tables of ratings, dimensions, weights, and list prices are included.

"Rubber Colors." Brooklyn Color Works, Inc., 129-143 Cherry St., Brooklyn, N. Y. This is a chart, for a loose-leaf binder, of 28 samples of rubber colors cured in a test formula. Accompanying the samples is a tabulation of data of dry color tests and colored rubber tests usually required of colors for rubber work.

"Hundreds of Dollars Saved by Analyzing Chart Records." The Brown Instrument Co., Philadelphia, Pa. The message of this folder will interest the manufacturer and technologist. It describes a full line of indicating, recording, and controlling instruments for the measurement of temperature, flow, percentages of carbonic acid gas, pressure, speed, and liquid level.

(*Continued on page* 52)

Rubber Industry in Europe

GREAT BRITAIN

Research Association

At the thirteenth annual meeting of the Research Association of British Rubber Manufacturers a new board of management was elected: Lieut.-Colonel J. Sealy Clarke, first president; G. Lever; R. W. Lunn; J. H. Mandleberg; W. J. S. Naunton; Colonel A. P. Pyne; A. S. Roberts; H. Rogers; A. Ryan; and W. T. Simpson.

Uncertain financial circumstances, further aggravated by the failure of the Rubber Industry Bill, seriously interfered with the work of the association; so the past 3 months were spent in securing finances necessary to resume work. Fortunately efforts were successful, and the government has agreed to give the association for a term of 5 years a grant of £1 per £ up to £5,000 a year, provided the industry puts up a minimum of £4,000 a year. Special arrangements have been made for the present year; so the association expects soon to resume regular work.

During the past year the organization compiled for the Rubber Growers' Association a "Handbook of Physical and Chemical Properties of Rubber." This 800-page book, nearing completion, will offer a collection of data unsurpassed by any similar technical publication, B. P. Porritt, director of research, said in his address at the meeting.

Regulating Rubber

The following Rubber Regulation Committee, which, it is understood, will cooperate with the Dutch on a restriction scheme, has been appointed by the Rubber Growers' Association Council: W. J. Gallagher, R. G. A. chairman; J. Fairbairn, R. G. A. vice chairman; F. D. Ascoli; N. C. S. Bosanquet; C. Figg; J. G. Hay; E. D. Hewan; G. H. Masefield; E. Macfadyen; H. E. Miller; J. L. Milne; E. B. Skinner; Sir Frank Swettenham; and Sir Herbert Wright.

Shoe and Leather Fair

At the recent Shoe and Leather Fair in London the Rubber Growers' Association displayed a variety of crepe-rubber-soled footwear including crepe-covered and crepe-soled sheepskin boots for airplane use and for skiing, as well as other boots entirely of sole crepe. The latter are popular with lumbermen and fishermen, among others, and, it is said, are easily made from sole crepe with the aid of a sharp knife and some rubber solution.

The Dunlop Rubber Co. showed its new seamless latex footwear in a variety of styles. Itshide, Ltd., introduced 2 cruising soles, obtainable in 6 colors, with novel designs: one bearing a life belt and ropes on crossed oars, and the other 3 sea gulls in flight.

Special mention may also be made of the Nu-matic leather footwear featured by Geo. Salwood & Co., Rushden. These have, besides a steel arch support, an inserted sponge rubber cushion.

Oriental Competition within the Empire

Under this heading the London *Rubber Age,* referring especially to a letter to the press by G. R. Hall Caine, discusses a new menace to home manufacturers of rubber footwear.

Mr. Hall Caine pointed out that Orientals within the Empire work for as low a wage as the Japanese, and the question is how their products are to be excluded if they attain to considerable volume under European stimulus, since the Ottawa Agreement was framed to give all imports from imperial territories preferential treatment, even though manufactures were financed by foreigners.

That the question is already of present importance appears to be indicated by the report from the Department of Overseas Trade that Bata now manufactures its well-known footwear in its own factory near Calcutta, India.

We further learn from the same source that of the total imports into India of footwear, chiefly rubber-soled shoes, totaling 2,857,867 pairs for the fiscal year ended June 30, 1933, against 2,807,787 pairs the year before, 2,525,738 pairs against 2,490,814 pairs came from Japan. Despite the heavy duty on these goods, the value dropped from 1,225,000 to 1,175,000 rupees. Imports from Czechoslovakia at the same time rose from 3 pairs to 262,449 pairs, value 300,000 rupees. But shipments from England, mostly leather footwear, fell from 36,079 to 29,317 pairs.

British Notes

The Clyde Rubber Works Co., Ltd., (in liquidation), Renfrew, Scotland, manufacturer of mechanical rubber goods, will be sold by Robert H. Clark, Liquidator, 124 St. Vincent St., Glasgow, Scotland, who invites bids for the company's ground, buildings, fixed machinery, plant, and stock of machinery and stores.

The first shipment of clothing incorporating latex thread has reached Manchester from America, and the public and the local manufacturers are displaying keen interest in these goods. *The India Rubber Journal* learns that manufacturing rights for England have already been secured.

Sales of Revertex in the British Empire will now be handled by the recently formed Revertex Sales Co., Ltd., King William St. House, Arthur St., London, E. C. 4.

In the reorganization of the India Tire & Rubber Co. (Great Britain), Ltd., the Dunlop Rubber Co. will obtain control. The India company intends to reduce its capital and wipe out its debit balance. Dunlop will take 2,350,000 new 1s. common shares at 2s. a share. This arrangement does not affect the individuality of the India company, which will continue to manufacture tires at its Inchinan factory.

GERMANY

1932 Tire Industry

A review of the German tire industry in 1932, appearing in the *Gummi-Zeitung,* shows that production of tires for motor vehicles has dropped again, but that output of tires and tubes for bicycles almost reached the record of 1927. The total number of tires and tubes for passenger cars approximated 2,000,000, 13% less than the year before; outputs of tires and tubes for trucks and busses declined from 371,000 to 281,000, or 24%. The peak of production of cycle tires and tubes was reached in 1927 when 31,300,000 were manufactured; by 1930 the total declined to about 20,000,000; in 1931 a recovery was noted; and last year the total was 29,800,000. The following table gives details of the production, local consumption, and foreign sales of all tires and tubes in 1932.

	Production	Sales	
		Local	Foreign
Tires for passenger cars			
Covers	1,111,750	1,072,543	100,294
Tubes	936,601	898,373	73,179
Tires for trucks and busses			
Giant pneumatics.	117,140	94,455	22,090
Tubes	114,804	94,416	16,971
Elastic tires with steel rim	47,920	54,344	1,900
Solid tires with steel rim	1,562	1,405	670
Tires for carts and tractors			
Pneumatic tires.	6,860	7,063	
Solid tires with steel rim	17,436	17,172	
Motorcycle tires			
Covers	492,034	474,378	9,763
Tubes	467,513	435,549	9,939
Cycle tires	17,072,978	15,337,883	670,580
Cycle tubes	12,695,501	11,921,021	675,084

The tire industry consumed 19,900

tons of rubber in 1932 against 20,800 tons the year before and at the same time used only 10% of reclaim against 23% the year before. The 18 tire manufacturing concerns employed about 7,100 persons and paid 12,800,000 marks in salaries and wages.

Latex Halftone Cuts

A German firm has succeeded in producing plates for printing halftone pictures by using latex. A matrix is made of the original etched plate, which is then filled up with latex. After vulcanization the rubber plate is mounted on to wood or metal as usual. For these latex plates is claimed the advantage of great economy. With it the cheapest paper can be printed, and such good results are obtained as cannot be had with any other process. Hammered or grained paper can be printed as well as very fine tissue paper, tin, wood, and other materials. In addition very little power is required for printing; the strain on machines and rolls is slight; and the saving in color is 30 to 40%. Furthermore the task of making ready the work, which requires care and experience, is eliminated when these cuts are used. It is also stated that the plates are surprisingly durable and stand several hundred-thousand printings. The main advantage of using the new plates is said to be that very effective prints in one or more colors can be made even when the cheapest kind of paper is used.

Women in the Industry

In line with the movement of the German government to bring women out of business and back to the home, the Continental Gummi-Werke A.G. is replacing women by men as far as possible. Besides it is offering all women workers employed in the Hannover and Limmer works at least a year a marriage subsidy of 500 marks if they marry before April 1, 1934.

France

Paul Bary and Lucien Graffe propose to replace zinc oxide with a more or less basic carbonate of zinc prepared by double reaction of carbonate of soda on a salt of zinc, sulphate, or chloride. This product, called B.G.125, is a finely granulated white powder, which is extremely friable and disperses perfectly and easily in a mix. For the new product is claimed greater reenforcing power than for the same proportion of zinc oxide; greater ease of milling than when either zinc oxide or carbonate of magnesia is used; and good aging qualities. It is soluble in rubber up to 10% of the weight of rubber; and, when less than 5 to 7% is used, mixes remain transparent. Up to 100% and more of B.G.125 may be introduced in a mix without fatiguing the rubber. The addition of 5% of this product to concentrated latex (60%) containing the usual protective colloid transforms this fluid emulsion into a paste thick enough for rubberizing fabrics and making dipped goods, a single dipping giving a film 0.8 to 1 mm. thick. Finally, mixtures of latex and the pigment coagulate on molds which have been heated to about 100°.

Société d'exploitation des Anciens Etablissements J. B. Torrilhon recently was formed to manufacture and sell all rubber goods, and for this purpose will be empowered to lease, manage, or acquire the works at Chamalieres (Puy-de-Dome) owned by the S.A. des Anciens Etablissements J. B. Torrilhon. The capital is 500,000 francs.

Other European Notes

The Austrian rubber industry is demanding increased import duties on rubber goods to counteract Japanese and German dumping. It is claimed that German manufacturers offer goods in Austria at prices 25% below those prevailing in the home market.

The United Helsingborg Rubber Factories, Helsingborg, Sweden, which owns 3 companies, reports a net profit of 1,380,000 kroner against 1,390,000 kroner the year before. A dividend of 7% is proposed on preferred shares, but nothing on the common. Business is very good despite the depression.

Ulf Styren, general manager of the Askim Gummivarefabrik, Askim, Norway, manufacturer of footwear, technical goods, and tires, was recently in the United States on business for his firm.

FINANCIAL

Faultless Rubber Co.

Faultless Rubber Co., Ashland, O., for the year ended June 30, reported a net income after depreciation, taxes, and other charges of $121,964, equal to $1.68 a share on 72,722 common shares, compared with net income before taxes of $104,786, or $1.43 a share on 73,382 shares, in the preceding fiscal year.

Boston Woven Hose & Rubber Co.

Boston Woven Hose & Rubber Co., Cambridge, Mass. For the year ended August 31, 1933, the company showed a gross income of $264,542.62. Net income after taxes, depreciation, and other charges was $54,990, equivalent after 6% preferred dividend requirements to 12¢ a share on 86,000 no-par common shares, contrasted with net loss of $155,192 in the preceding fiscal year.

Pacific Coast

(*Continued from page* 46)

insulation, established 1898, maintains store and office at 122-126 E. Third St. and factory and warehouse at 2031 E. 51st St., both in Los Angeles, Calif. Company executives include W. A. Corder, president and treasurer; Walter Cox, vice president; and S. K. Durfee, secretary.

The Fourteenth NRA Annual Golf Tournament of the Pacific Coast Mechanical Rubbermen's Golf Association will be held at the Riviera Golf Club, Los Angeles, Calif., November 6 and 7. A banquet will take place November 7 in the club house. The tournament committee consists of Tim Horan, of Pioneer Rubber Mills, president; W. Art Corder, of L. A. Rubber & Asbestos Works, Inc., vice president; R. C. Tucker and Harry Jensen, both of the U. S. Rubber Products Co.; S. S. Horchetz, of The B. F. Goodrich Rubber Co.; and W. C. Hendrie, of W. C. Hendrie & Co.

World Rubber Absorption—Net Imports

	Long Tons—1933		
Consumption	June	July	Aug.
United States ...	51,326	50,184	44,939
United Kingdom..	4,837	6,566	7,575
Net Imports			
Australia	613	2,347	1,500
Austria	266	266	...
Belgium	469	299	325
Canada	1,441	1,192	1,795
Czechoslovakia ..	400	287	...
Denmark	211	120	237
Finland	87	33	100
France	4,056	3,774	5,489
Germany	3,639	4,103	4,193
Italy	1,997	1,146	...
Japan	3,330	1,460	4,426
Netherlands	†519	16	209
Norway	79	59	77
Russia	2,000	2,952	...
Spain	541	435	606
Sweden	395	274	202
Switzerland	54	104	64
Others	*1,450	*1,450	*1,450
Totals	77,710	77,067	...
Minus U. S. (Cons.)	51,326	50,184	44,939
Total foreign.....	26,384	26,883	...

*Estimate to complete table.
†Indicating excess of reexports over imports.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for September, 1933:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

	September, 1933	
To	Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
United Kingdom	4,894	163
United States	29,361	580
Continent of Europe...	8,683	163
British possessions ...	321	19
Japan	4,957	42
Other countries	423	1
Totals	48,639	968

Rubber Imports: Actual, by Land and Sea

	September, 1933	
From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	517	6,692
Dutch Borneo	532	4,969
Java and other Dutch islands..	147	23
Sarawak	1,015	12
British Borneo	304	36
Burma	38	3
Siam	329	282
French Indo-China	137	35
Other countries	67	8
Totals	3,086	12,060

Rubber Industry in Far East

MALAYA

Planters' Conference

In August, 1933, was held the ninth annual conference of planters when various interesting papers were submitted. Mr. Mann, in his talk, "Some Aspects of Economic Production," again gave figures regarding yields from commercial tapping of bud-grafts. He gives first the following series:

Area in Acres	Clones Used	Age and Yield per Acre per Annum: Years	Pounds
54	BD 2, 5, and 10, mixed..	6	415
257	AVROS 36, mixed with others	6	350
118	AVROS 36, monoclone....	7	560
41	AVROS 36, 33, 49, 50, mixed	6½	440
192	HAPM clones, mixed.....	10	1,028
38	AVROS clones, mixed....	8½	990

Next follow data referring to an area of about 80 acres, budded and heavily supplied with budded stumps in 1925 and 1926, of the oldest AVROS clones: namely, 33, 36, 49, 50, 52, and 80. Early tapping tests indicated that with 100 tappable trees per acre the yield should have been:

Years	Pounds per Acre
5 to 6	590
6 to 7	950
7 to 8	1,090

Actually the yields were:

Years	Pounds per Acre
5 to 6	350
6 to 7	605
7 to 7½	*405

*Half of current year.

The yield for the current year is expected to reach 900 pounds, since the yield for the first half of the year, which includes the wintering period, is about 20% lower than for the second half of the year. So that although the early yields were not up to expectations, indications are that the early promise of good proved clones will ultimately be obtained. Incidentally, it is pointed out that of the AVROS clones mentioned, only 49 and 50 are now regarded as first class.

This point recalls to mind that the planting correspondent of the *Straits Times* recently stated that of the 1,026 acres budded by Gough on Prang Besar estate, only about 10 acres had been planted with clones now considered first class, and about 100 acres with good, but not exceptional clones. The yield from this area of largely unproved clones is expected to be 500 pounds an acre, at a conservative estimate; it may be more. This figure, however, is far from the 1,000 and even 2,000 pounds per acre expected from the areas of proved clones and indicates that those who planted up large acreages of unproved clones in the early days of bud-grafting will probably be greatly disappointed.

"Oidium Hevea and Methods of Control" was F. Beeley's lecture. The costs of sulphur dusting, he stated, are over $1.30 an acre for 5 treatments a season over an area of 2,000 acres. The benefits of the treatment are improved foliage and bark and slightly increased yield. Asked whether there was more or less Oidium on native holdings than on estates, Mr. Beeley replied that his observations showed the infection to be just as great as on estates, but that kampong trees seem to throw off the disease more quickly.

The chairman of the Incorporated Society of Planters, C. Footner, aroused lively interest by his discussion of the "Mechanical Problem of Sheeting." He has invented a new type of sheeting machine, a compact, portable, multi-roll arrangement of 4 plain rolls and a marker. The rolls will probably be rubber-covered as such rolls seem to give the best results for this system and are neutral to the action of acid.

Hevea Clones

Planting Manual No. 5 of the Rubber Research Institute of Malaya deals with a "History and Description of Clones of Hevea Brasiliensis," by C. E. T. Mann and C. C. T. Sharp. Although considerable variation occurs among buddings of the same clone, there are certain well-defined characteristics by which the different clones can usually be identified. In the present work these characteristics, as branching habit, shape of leaves, stem, etc., of each of a total of 14 clones of Java, Sumatra, and Malaya that have been used in commercial plantings in recent years are described, and illustrations of a typical one-year-old budding, a typical leaf, and a sketch of a budded tree 3 to 4 years old, to show the branching habit and general tree shape, accompany the descriptions. In addition details are given of the history of the clone, yield figures, tapping systems, bark renewal, and disease.

In examining the data for these clones, we learn that in many cases the yield tapers off about the tenth to eleventh year. However, since slight set-backs with subsequent recovery are recorded for some of the highest yielding clones, the decline probably is temporary. We also note that hardly any clones are entirely free from defects.

Malayan Notes

The Singapore Traction Co. will equip 10 new busses with Dunlopillo cellular rubber cushions.

The Singapore Harbor Board is erecting a plant for bulk shipment of latex for the Dunlop Plantations (Malacca), Ltd. Underground tanks at the main wharf, with a present capacity of 150 tons, will receive the latex from the transportation wagons. From the tanks the latex will be forced into overhead pipe lines which cross the wharf and connect with ships' tanks by flexible hose. Hitherto the latex has been shipped in steel drums, but the increasing export has led to the adoption of this cheaper method. The first bulk shipment is expected by the year-end.

Indo-China

Last month we mentioned that 28% of Indo-China's rubber area was budded, a larger percentage than that of any other rubber center. This month is available information regarding research work on budding and selection of *Hevea* in progress at the Experimental Station of Giaray-Ongyem. Here a number of foreign and local clones were established to test their behavior on red and grey soils, and by 1932 were 163 different clones, including 85 foreign (59 Netherlands East Indies clones, 18 Malayan, and 8 Ceylon clones) and 78 local clones planted over an area of 47 hectares.

The clones include a number of unproved ones and others no longer recommended, but these have specially been used for the purpose of the experiment. Besides, 5 isolated seed gardens have been created. One is polyclone, and the other 4 monoclone, the latter including 2 Dutch clones, AV 49 and BD 5, both of which appear to do well in Indo-China, and 2 local clones, unproved, but apparently showing excellent qualities.

It is worth noting that in Indo-China experience with budding *Heveas* of over 2 years has not been encouraging; a large percentage, up to 20%, of such trees showed decay of the snag. When trees of 5 to 6 years are budded, a plantation so treated is said to be absolutely lost, the great majority decaying at the snag and refusing to heal.

Experiments will be conducted to determine whether it would pay to replant old rubber areas on grey soil with young budded *Hevea* or whether it would be better to replant with an entirely different crop, say kapok or teak.

NETHERLANDS EAST INDIES

Wind Damaged Clones

The greater susceptibility to damage by wind of certain clones is illustrated by an AVROS report of the effects of a storm of June 25, 1933, on trees at the Experiment Station Polonia. The total area under rubber is 117.7 hectares made up of plots ranging from 6 months to 6½ years, planted to a large variety of clones. Of these trees 934 were lost in the storm, 417 breaking off at the crown and 517 near or under the ground.

No young buddings or seedlings 6 months to 1½ years old suffered, but the percentage of broken trees was high among clone Tjirandji 1 and AVROS clones 71, 152, and 163 ranging in age from 2½ to 5½ years; while a large number of trees of AVROS 214 were considerably bent. Clones AVROS 49 and 256, 2½ to 6½ years old, were not greatly troubled by the wind; while clones AVROS 50 and Bodjong Datar 5 of the same age showed great resistance to damage by wind, practically no trees of these clones were broken or even bent when adjoining plots of other clones suffered seriously.

It is interesting to note that a section of 5½-year-old seedlings from good Soengei Pantjoer producers suffered more from the wind than did the adjoining plot of buddings of the same age derived from various clones. It should be added that the seedlings, planted 338 trees per hectare, had not been thinned out; whereas the buddings had been thinned out to 270 trees per hectare, trees from clone 163 and especially clone 36, both highly susceptible to wind damage, having been removed. Nevertheless the fact remains that these 5½-year-old seedlings showed less resistance than the best clones.

Preparation of Rubber

The West Java Experiment Station report on preparation of rubber during 1931 and 1932 reads that a few estates which have just started tapping are equipping their factories in a very modest manner. Buildings are semi-permanent, and hand mangles have been provided for sheeting the coagulum. In this connection it is recalled that an inquiry into costs of preparation in the Malang district in 1931 showed that 2 estates working with hand mangles had the lowest costs.

Tests made with a German preparation, "First Para Maker," a coagulant aiming to produce smoked sheet without smoke, were failures. Attempts to economize by coagulating with sugar and so-called tea-cider also had to be given up as they complicated the process.

A new sheeting mangle with ebonite-covered rolls is giving satisfaction on one estate.

Interest in latex is increasing in America and Europe. In Java, Mauser, Wakefield, and B.P.M. drums are used for shipping the concentrated or preserved latex. Bulk shipment is the rule in Sumatra. The difference in shipping method is explained when we see that latex exports from Java were only 69.9 tons in 1931 and 263.4 tons in 1932; while Sumatra sent 10,531 tons in 1931 and 9,651 tons in 1932.

Shipments of sprayed rubber from both Java and Sumatra declined in 1932 as compared with 1931. Java's decrease from 5,000 tons to 2,139.6 tons largely was due to the fact that an important concern in West Java has abandoned the preparation of sprayed rubber and is now making sheet with a new type of sheeting battery with continuous action. This change, by the way, has effected a saving of 1 cent per kilo in preparation costs. Sumatra's exports of sprayed rubber were 8,246 tons in 1932 against 10,465 tons in 1931.

Sole crepe was produced on 13 estates in Java and South Sumatra during 1931, output being 425.2 tons, and in 1932, 14 estates produced 439.3 tons. In East Coast Sumatra 25 estates continue to make sole crepe, but details regarding quantity produced are not available.

Finally, a growing tendency is noted in Sumatra to pack rubber, also sprayed rubber, in bales.

New Publications

(*Continued from page* 48)

"The Black Art of Rubber Compounding. Chat No. 23. Micronex Summary for 1933." Binney & Smith Co., 41 E. 42nd St., New York, N. Y. In this number the paging reaches a total of 348 for the series, which is devoted to expounding for the rubber technologist the advantages he may expect from the special forms of carbon black produced by this company. The summary covers the technical history of Standard Micronex and its present-day application, Micronex W-5 for wire insulation, Dustless Micronex, and Fumonex.

"Forestalling Labor Troubles." Farrel-Birmingham Co., Inc., Ansonia, Conn. This timely booklet is of exceptional industrial interest. The increase of output per 1,000 man-hours of labor by the transfer of skill to mechanism is illustrated in the mixing of rubber shoe stock by roll-mills and Banbury mixer. The reduction in labor cost per unit is shown to be 77.6% in favor of the special mixer.

"A Guide to the Literature on Rubber." Letter Circular L. C. 305. Revised September 20, 1933. United States Department of Commerce, Bureau of Standards, Washington, D. C. This Letter Circular is intended to assist the reader who may be unfamiliar with rubber technology in obtaining recent and authentic information relating to the production of rubber and rubber products. It is not an exhaustive survey of rubber literature, but its aim is to point out those recent books, current periodicals, and other publications which are likely to be readily accessible and most useful to American readers. Only casual reference is made to the patent literature since patents are seldom found useful as sources of information.

"The Older Employe in Industry." Policyholders Service Bureau Group Insurance Division, Metropolitan Life Insurance Co., Home Office, New York, N. Y., 1933. This pamphlet presents the results of an extensive survey of the problem of the older employe in industry by prominent experts in the field of industrial relations in the United States.

"Publications Relating to Rubber." Letter Circular L. C. 178. Revised to September 21, 1933. United States Department of Commerce, Bureau of Standards, Washington, D. C. This circular contains a classified list of publications on rubber by members of the staff of the Bureau of Standards. The classification is by subject matter, and under each heading the publications are listed in reverse chronological order so that the latest work appears first.

"Further Notes on 'Bettablack' and 'Fillablack.'" Bideford Black, Ltd., 1 Haydon St., Minories, London, E.1, England. This booklet gives the source and the characteristics of these mineral blacks and compares their volume cost with gas black, colloidal clay, etc. A number of dry rubber mixing and latex mixings are given in which "Bettablack" is used. Similarly 2 formulae are listed illustrating the use of "Fillablack" in hard rubber compositions.

"Public Health Reports." United States Public Health Service. United States Government Printing Office, Washington, D. C., 1933. The issue of August 11, 1933, which is Number 32 of Volume 48, contains a very interesting article by Drinker and Fairhall on zinc in relation to general and industrial hygiene. It is well understood that zinc as a rubber pigment is not in any sense poisonous because zinc has been used for many years in the manufacture of rubber products including toys for babies, without any illness being due to the zinc.

"Announcing a New Recording Thermometer and Pressure Gage." The Brown Instrument Co., Philadelphia, Pa. This uniquely designed folder illustrates and describes a new combination instrument of great practical utility in which are embodied 5 worthwhile special features. These are electric chart drive, automatic pen release, elimination of chart knob, switch to start and stop chart drive, and combination door handle and built-in lock.

Patents and Trade Marks

MACHINERY

United States

1,924,210. **Plastic Stock Manipulator.** F. J. MacDonald, Brookline, Mass., assignor to B. F. Goodrich Co., New York, N. Y.

1,924,530. **Tire Mold Pressure Bag.** H. J. Woock, assignor to Super Mold Corp., both of Lodi, Calif.

1,924,576. **Rubber Composition Treating Device.** A. Szegvari, assignor to American Anode, Inc., both of Akron, O.

1,925,084. **Shearing Apparatus.** T. W. Morris, Chicago, Ill.

1,925,545. **Tubing Machine.** V. Royle, Paterson, N. J.

1,925,884. **Article Trimmer.** C. W. Steele, deceased, by L. K. Steele, administratrix, both of Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,925,894. **Tire Builder.** E. H. Barder and C. W. Leguillon, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,925,899. **Footwear Apparatus.** A. A. Glidden and T. M. Knowland, both of Watertown, and L. H. Burnham, Lexington, all in Mass., assignors, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,925,904. **Thickness Gage.** R. Mayne, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,925,993. **Tire Repair Vulcanizer.** W. J. Cassley and J. W. Brundage, assignors to Summit Mold & Machine Co., all of Akron, O.

1,925,995. **Tire Vulcanizer.** P. De Mattia, Passaic, N. J., assignor to National Rubber Machinery Co., Akron, O.

1,926,263. **Curing Bag Connector.** W. G. Christopherson, Grosse Pointe Park, assignor to Morgan & Wright, Detroit, both in Mich.

1,926,306. **Foreign Matter Remover.** W. E. Pettersen, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,926,310. **Tire Expander and Bagger.** W. L. Pipes, Elizabeth, N. J., assignor to Morgan & Wright, Detroit, Mich.

1,926,345. **Tire Building Drum.** T. A. Miller, assignor to National Rubber Machinery Co., both of Akron, O.

1,926,465. **Painting Machine.** J. F. Townsend, assignor to Worthington Ball Co., both of Elyria, O.

1,926,520. **Hot Point Regroover.** J. B. Fox, Lincoln, Neb.

1,926,701 and 1,926,702. **Aqueous Rubber Dispersion Concentrator.** U. Pestalozza, assignor to Societa Italiana Pirelli, both of Milan, Italy.

1,926,943. **Insoluble Cement Solution Apparatus.** H. G. Halloran, Milton, Mass.

1,927,064. **Foxing Treating Machine.** S. J. Finn, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,927,400. **Conductor Insulating Apparatus.** A. N. Gray, Baltimore, Md., and A. R. Kemp, Westwood, N. J., assignors to Bell Telephone Laboratories, Inc., New York, N. Y.

1,927,688. **Means for Making Hose Connections.** G. L. McKee, assignor, by direct and mesne assignments, to Hose Stayput Tool Co., both of Denver, Colo.

1,927,803. **Expansible Core.** G. F. Mullin, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,927,811. **Tire Bead Core Machine.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

Dominion of Canada

334,081. **Tire Regrooving Tool.** G. Raaflaub, Toronto, Ont.

334,196. **Hose Machine.** Spadone Machine Co., Inc., New York, assignee of C. C. Spadone, Rockville Center, both in N. Y., U. S. A.

334,490. **Liquid Separator.** De Laval Separator Co., New York, N. Y., U. S. A., assignee of S. A B. Dahlgren, Alsten, Sweden.

334,694. **Centrifugal Bowl.** De Laval Separator Co., New York, assignee of G. J. Strezynski, Poughkeepsie, both in N. Y., U. S. A.

334,712. **Tire Bead Flipper.** General Tire & Rubber Co., assignee of H. A. Denmire, both of Akron, O., U. S. A.

334,922. **Cord Belt Machine.** Goodyear Tire & Rubber Co., assignee of W. H. Gerstenslager, both of Akron, O., U. S. A.

United Kingdom

392,674. **Tire Making Machine.** Firestone Tyre & Rubber Co., Ltd., Middlesex, assignee of H. D. Stevens, Akron, O., U. S. A.

392,742. **Fabric Impregnating Machine.** W. W. Triggs, London. (Stedfast Rubber Co., Inc., Boston, Mass., U. S. A.)

392,823. **Shoe Stamp-Welding Press.** I. and L. Dorogi and Dr. Dorogi Es Tarsa Gummigyar R. T., all of Budapest, Hungary.

392,870. **Repair Vulcanizer.** G. S. Dawe, Mortdale, Australia.

393,153. **Rubber Treating Machine.** Etablissements Hutchinson and Materiel Special L.M.S., both of Paris, France.

393,222. **Disintegratable Molding Core.** Soc. Italiana Pirelli, Milan, Italy.

393,644. **Centrifugal Machine.** E. M. Richardson, London.

393,732. **Latex Concentrating Apparatus.** Metallges. Akt.-Ges., A. Petersen, and W. Gensecke, all of Frankfurt a. M., Germany.

393,805. **Brush Back Mold.** W. Wessel, Remscheid, Germany.

Germany

583,722. **Edge Roller for Seamless Goods.** Carl J. Schmid, Inc., New York, N. Y., U. S. A. Represented by B. Kugelmann, Berlin.

584,548. **Kneading and Mixing Controller.** Continental Gummi-Werke A.G., Hannover.

585,309. **Rubber Belt Drive.** A. Obermoser, Bruchsal i. Baden.

585,366. **Unvulcanized Thread Separator.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. and E. Wiegand, both of Berlin.

PROCESS

United States

1,924,214. **Articles from Rubber Dispersions.** E. B. Newton, assignor to American Anode, Inc., both of Akron, O.

1,924,328. **Printing Blanket.** T. L. McElroy, Brooklyn, N. Y.

1,924,354 and 1,924,355. **Belt.** A. L. Freedlander, Dayton, O.

1,924,617. **Latex Glove.** L. R. Miller, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,924,635. **Laminated Fabric.** M. Buffington, Roselle Park, assignor to Lea Fabrics, Inc., Newark, both in N. J.

1,924,663. **Footwear.** J. E. Taber, South Bend, assignor to Mishawaka Rubber & Woolen Mfg. Co., Mishawaka, both in Ind.

1,924,923 and 1,924,924. **Rubber Thread.** W. A. Gibbons, Montclair, N. J., assignor to Revere Rubber Co, Providence, R. I.

1,924,974. **Artificial Sponge for Scouring.** A. Blustein, Washington, D. C.

1,925,206. **Sheet Packing.** R. Roberts, Pasadena, assignor of ⅓ to H. Giese, Santa Barbara, both in Calif.

1,925,516. **Plaited Work.** G. Böckmann, Cologne-Mulheim, assignor to Franz Clouth, Rheinische Gummiwarenfabrik A. G., Cologne, both in Germany.

1,925,879. **Rubber Product.** G. Oenslager, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,925,887. **Steering Wheel.** H. E. Waner, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,925,921. **Floor Covering.** A. A. Godfrey, assignor to Linoleum Mfg. Co., Ltd., both of London, England.

1,926,303. **Floor Covering.** H. Paulus, Nuremberg, Germany.

1,926,524. **Adhering Rubber to Aluminum.** F. Gábor, E. Csutorás, and G. László, all of Budapest, Hungary, assignors to Anode Rubber Co., Ltd., a company of Guernsey.

1,926,599. **Artificial Leather.** G. A. Richter, assignor to Brown Co., both of Berlin, N. H.

1,926,867. **Uniting Metal to Rubber.** H. L. Fisher, Leonia, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

Dominion of Canada

333,859. **Rubber Manufacture.** A. J. A. Y. de Schepper, The Hague, Holland.

333,998. **Goods from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. W. Madge and A. N. Ward, co-inventors, both of Birmingham, England.

334,040. **Vulcanized Rubber Product.** A. Ferretti, Milan, Italy.
334,052. **Puncture-Proof Inner Tube.** E. Hirsch, Toronto, Ont.
334,170. **Tire.** National-Standard Co., assignee of R. C. Pierce, both of Niles, Mich., U. S. A.
334,355. **Cemented Pile Fabric.** Lea Fabrics, Inc., Newark, assignee of E. H. Ward, E. Orange, and E. G. Jegge, Montclair, co-inventors, all in N. J., U. S. A.

United Kingdom

392,497. **Goods from Rubber Dispersions.** S. Kay & Co., Ltd., and W. Kay, both of Bury.
392,592. **Obtaining Rubber from Dispersions.** A. J. A. Y. de Schepper, The Hague, Netherlands.
392,737. **Connecting Uppers to Insoles and Soles.** A. E. Marlow, Ltd., Northampton, and H. St. V. B. Marlow, Northamptonshire.

Germany

584,890. **Microporous Products.** Dunlop Rubber Co, Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.
584,891. **Cellular Rubber Objects.** Société Belge du Caoutchouc Mousse, Brussels, Belgium. Represented by T. von Laczay, Berlin.
585,365. **Microporous Rubber Bands.** Accumulatoren-Fabrik, A.G., Berlin.

CHEMICAL

United States

1,924,170. **Latex Composition.** A. Szegvari, assignor to American Anode, Inc., both of Akron, O.
1,924,227. **Artificial Rubber.** W. Bock and E. Tschunkur, both of Cologne-Mulheim, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.
1,924,566 and 1,924,567. **Accelerator.** L. Orthner, Leverkusen-I. G. Werk, and E. Zaucker and M. Bögemann, both of Cologne-Mulheim a. Rhine, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.
1,924,574. **Accelerator.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.
1,925,085. **Gilsonite Solution.** I. J. Novak, assignor to Raybestos-Manhattan, Inc., both of Bridgeport, Conn.
1,925,707. **Accelerator.** G. H. Stevens, Newark, N. J.
1,926,285. **Thickening Latex.** A. W. Holmberg and P. E. Rice, assignors to Naugatuck Chemical Co., all of Naugatuck, Conn.
1,926,314. **Styrols.** O. H. Smith, W. Englewood, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
1,926,424. **Vulcanization Product.** A. Beck, Ludwigshafen a. Rhine, and H. Klein, Mannheim, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.
1,926,739 and 1,926,740. **Accelerator.** W. J. Clapson and J. R. Sheppard, both of Joplin, Mo., assignors to Eagle-Picher Lead Co., Cincinnati, O.

Dominion of Canada

333,669. **Porous Caoutchouc.** A. Mathiesen and O. Jorgensen, co-inventors, both of Oslo, Norway.
333,741. **Carbon Black.** Godfrey L. Cabot, Inc., Boston, assignee of E. Billings, Weston, and H. H. Offutt, Winchester, co-inventors, all in Mass., U. S. A.
333,757. **Age Resister.** E. I. du Pont de Nemours & Co., Wilmington, Del., assignee of W. S. Calcott and W. A. Douglass, co-inventors, both of Penns Grove, N. J., all in the U. S. A.
333,924. **Latex Coagulation.** Dewey & Almy Chemical Co., N. Cambridge, assignee of S. B. Neiley, Winchester, both in Mass., U. S. A.
333,938. **Accelerator.** Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.
333,939. **Antioxidant.** Goodyear Tire & Rubber Co., Akron, assignee of A. M. Clifford, Stow, both in O., U. S. A.
334,093. **Gypsum-Rubber Composition.** F. H. Untiedt, Washington, D. C., U. S. A.
334,216. **Rubber Photographic Film.** A. G. Adamson, inventor, and W. M. Still & Sons, Ltd., assignee of ½ of the interest, both of London, England.
334,599. **Sheet Rubber.** P. Schidrowitz, M. W. Philpott, and R. M. Ungar, co-inventors, all of London, England.
334,907. **Latex Composition.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of J. McGavack, Leonia, and R. F. Tefft, Nutley, co-inventors, both in N. J., U. S. A.
335,005. **Golf Ball Coating.** W. C. Geer, Ithaca, N. Y., U. S. A.
335,059. **Latex Adhesive.** Canadian Industries, Ltd., Montreal, P. Q., assignee of R. B. F. F. Clarke, Cheshire, and E. B. Robinson and A. Shepherdson, both of Lancashire, co-inventors, all in England.
335,066. **Thickening Latex.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. W. Holmberg and P. E. Rice, co-inventors, both of Naugatuck, Conn., U. S. A.
335,067. **Rubber Insulation.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of J. McGavack, Leonia, N. J., U. S. A.
335,068. **Rubber Insulation.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. DeB. Rice, Barrington, R. I., U. S. A.
335,069. **Rubber to Metal Composition.** Dunlop Rubber Co., Ltd., London, assignee of D. F. Twiss, F. A. Jones, and J. H. Anderson, co-inventors, all of Birmingham, all in England.
335,078. **Age Resister.** I. G. Farbenindustrie A. G., Frankfurt a. M., assignee of L. Orthner, Leverkusen a. Rhine, and M. Bogemann and T. Weigel, both of Köln-Mulheim, co-inventors, all in Germany.
335,151. **Accelerator.** W. P. TER Horst, Wayne, N. J., U. S. A.

United Kingdom

392,797. **Rubber Composition.** G. Galimberti and G. Peverelli, both of Milan, Italy.
392,934. **Friction Composition.** H. B. Denman, Birmingham, Mich., U. S. A.
392,958. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, Birmingham.
392,966. **Rubber Composition.** Imperial Chemical Industries, Ltd., London, and R. B. F. F. Clarke, Manchester.
393,022 and 393,023. **Microporous Rubber Composition.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. W. Madge and A. N. Ward, both of Birmingham.
393,036. **Latex Rubber Goods.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and D. F. Twiss and W. McCowan, both of Birmingham.
393,048. **Rubber Composition.** Siemens-Schuckertwerke A. G., Berlin, Germany.
393,057. **Thread from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. A. Murphy and R. G. James, both of Birmingham.
393,115. **Rubber Composition.** W. L. Utermark, Bussum, Holland.
393,141. **Fibrous Composition.** V. Kaufmann, Mannheim, Germany.
393,474. **Pigment.** Harshaw Chemical Co., Cuyahoga Falls, assignee of C. J. Harbert, Cleveland Heights, both in O., U. S. A.
393,575. **Coating Composition.** H. Plauson, Darmstadt, Germany.
393,600. **Rubber Substitute.** J. T. Giron, Mexico City, Mexico.
393,614. **Latex Composition.** E. A. L. Dubois, Vigo, Spain.
393,769. **Making Dispersions.** H. T. Böhme A. G., Chemnitz, Germany.
394,077. **Making Emulsions.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., St. Peter's Port, Channel Islands, and D. F. Twiss and W. McCowan, both of Birmingham.
394,096. **Cable Insulation.** Siemens-Schuckertwerke A. G., Berlin, Germany.

Germany

583,914. **Rubberlike Masses.** Canadian Electro Products Co., Ltd., Montreal, P. Q., Canada. Represented by A. Bohr and H. Fincke, both of Berlin.
584,892. **Reclaiming Rubber.** E. Bemelmans, The Hague, Holland. Represented by W. von Sauer, Berlin.
585,405. **Rubber Solutions.** Immalin Werke Chemische Fabrik Eisendrath G.m.b.H., Mettmann i. Rhld.

GENERAL

United States

1,924,148. **Inner Tube.** C. Bradley, Nashville, Tenn.
1,924,152. **Toothbrush.** D. M. and Z. T. Coney, both of San Francisco, Calif.
1,924,173. **Tire Valve Stem.** A. P. Williamson, Shaker Heights, assignor to Dill Mfg. Co., Cleveland, both in O.
1,924,204. **Bedpan Cushion.** B. I. C. Young, Pasadena, Calif.
1,924,236. **Balloon.** M. Friedberg, Chicago, Ill.
1,924,237. **Railway Bogie Truck.** R. T. Glascodine, London, England.
1,924,269. **Shock Absorbing Wheel.** W. A. Brown, Philadelphia, Pa.
1,924,337. **Dental Massaging Appliance.** A. B. Troupa, Princeton, Ill.
1,924,411. **Ventilator.** J. G. Moser, San Francisco, Calif.
1,924,502. **Article Holder.** R. M. Kincaid, assignor to Chrysler Corp., both of Detroit, Mich.
1,924,504. **Motor Mounting.** R. K. Lee, Highland Park, assignor to Chrysler Corp., Detroit, both in Mich

1,924,512. **Trouser Protector.** D. Porreca, Atlanta, Ga.
1,924,555. **Machinery Packing.** C. R. Hubbard, assignor to Garlock Packing Co., both of Palmyra, N. Y.
1,924,579. **Cap Wrench.** J. W. Waterhouse, assignor to G. E. Watts, both of Portland, Ore.
1,924,596. **Dog Leash.** H. C. Davis, Pittsburgh, Pa.
1,924,598. **Elastic Fabric.** W. Eustis, Newton, assignor to Kendall Co., Walpole, both in Mass.
1,924,642. **Sanitary Garment.** J. G. Frieman, Los Angeles, Calif.
1,924,662. **Refrigerating Apparatus.** O. M. Summers, assignor to Frigidaire Corp., both of Dayton, O.
1,924,712. **Hose Coupling.** A. A. Eisenman, Manitowoc, Wis.
1,924,716. **Rubber Boot.** C. Ferrettie, assignor to Mishawaka Rubber & Woolen Mfg. Co., both of Mishawaka, Ind.
1,924,792. **Foot Instep Support.** A. H. Kay, Alderley Edge, England.
1,924,921. **Tire Pressure Indicator.** C. A. Frank, Edgewood Arsenal, Md.
1,925,008. **Sink Stopple.** W. F. Schacht, Huntington, Ind.
1,925,031. **Pneumatic Tire Tube.** R. S. Chitester, Brookville, Pa.
1,925,071 and 1,925,072. **Shaft Vibration Damper.** W. R. Griswold, assignor to Packard Motor Car Co., both of Detroit, Mich.
1,925,073. **Crank Shaft Vibration Damper.** E. G. Gunn, assignor, by mesne assignments, to Packard Motor Car Co., both of Detroit, Mich.
1,925,074. **Shaft Vibration Damper.** T. J. Litle, Jr., Indianapolis, Ind., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich.
1,925,114. **Windshield Heater.** G. J. Seiss, Toledo, O.
1,925,230. **Syringe.** H. L. Buckhout, Rochester, N. Y.
1,925,241. **Antidrip Coaster.** D. L. Fullerton, Cleveland Heights, O.
1,925,260. **Garter Band.** A. J. Krein, assignor to Nobelt Co. of America, both of Baltimore, Md.
1,925,271. **Composite Floor.** R. G. Miller, Farmingdale, N. Y., assignor to Aviation Patent & Research Corp., a corporation of N. Y.
1,925,278. **Clutch.** C. R. Paton, assignor to Studebaker Corp., both of South Bend, Ind.
1,925,279. **Tractor Semi-Trailer Fifth Wheel Structure.** F. M. Reid, assignor to Fruehauf Trailer Corp., both of Detroit, Mich.
1,925,359. **Pressure Flusher for Plumbing Drains.** F. Alonso, Belvedere Gardens, Calif.
1,925,388. **Eraser.** W. H. Hutter, Racine, Wis., assignor to G. Reinke, Chicago, Ill., as trustee.
1,925,437. **Clock.** C. B. Drake, Norfolk, Va.
1,925,447. **Vibratory Screen.** W. L. Keefer, assignor to H. G. Wolf, both of Chambersburg, Pa.
1,925,486. **Sole Antislipping Spike.** H. Jessell, Tacoma, Wash.
1,925,630. **Bedpan Cushion.** M. M. Fees, Prescott, Ariz.
1,925,639. **Diaphragm Support.** S. Levy, San Francisco, Calif.
1,925,734. **Floor Mat.** C. E. Reiss, Cuyahoga Falls, O.
1,925,898. **Fluid Seal.** H. E. Fritz, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,925,901. **Hose Protective Sheath.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,926,078. **Brassière.** R. Yonts, assignor to H. W. Gossard Co., both of Chicago, Ill.
1,926,197. **Pipe Coupling.** A. W. Durr, Akron, O., assignor to American Hard Rubber Co., New York, N. Y.
1,926,239. **Portable Electric Lamp.** L. Ludwig, Brooklyn, N. Y.
1,926,244. **Wheeled Track-laying Unit.** W. D. Sargent, Newark, N. J.
1,926,289. **Eraser.** T. Kovacs, Berlin, Germany.
1,926,312. **Printer's Roller.** E. J. Smith, Detroit, Mich.
1,926,315. **Golf Ball.** R. F. Smith, Longmeadow, assignor to Revere Rubber Co., Providence, both in R. I.
1,926,334. **Axle Mounting.** W. S. Gurton, J. Plint, and H. Nyberg, assignors to Dominion Truck Equipment Co., Ltd., all of Kitchener, Ont., Canada.
1,926,422. **Pipe Joint.** F. C. Armbruster, Rochester, N. Y.
1,926,615. **Ball.** P. Drohnn, Wolfenbuttel, Germany.
1,926,625. **Boot.** E. and E. B. Isaksson and M. A. Paulsson, all of Torekov, Sweden.
1,926,750 and 1,926,751. **Suspenders.** E. S. Mix and F. D. Johnson, both of Rochester, N. Y., assignors to Hickok Mfg. Co., Inc., a corporation of N. Y.
1,926,763. **Seat Shock Absorber.** A. W. Cliffe, Lansdowne, Ont., Canada.
1,926,818. **Shoe Insert.** R. R. Ratcliff, Columbus, O.
1,926,865. **Insulated Coil.** C. S. Bushnell and E. H. Branson, assignors to General Railway Signal Co., all of Rochester, N. Y.
1,926,872. **Sewing Machine Knee Protector.** C. C. Johnson, Poughkeepsie, N. Y.
1,926,937. **Bathing Cap.** I. K. de Wet, Mt. Marlow, South Africa.
1,927,049. **Blanket Stretcher.** H. F. Schmidt and L. Jung, both of Milwaukee, Wis.
1,927,142. **Eraser and Holding Tip.** H. B. Van Dorn, Maplewood, N. J., and F. H. Mix, Brooklyn, N. Y., assignors to Joseph Dixon Crucible Co., Jersey City, N. J.
1,927,446. **Vehicle Wheel.** W. Qualey, Cincinnati, and R. H. Tyrrell, Cleveland, assignors to Ohio Rubber Co., Cleveland, all in O.
1,927,450. **Gasket.** G. T. Balfe, assignor to Detroit Gasket & Mfg. Co., both of Detroit, Mich.
1,927,471. **Pillow Bag.** I. J. Salomon, Baltimore, Md.
1,927,725. **Valve for Pneumatic Devices.** E. E. Tompkins, Haverford, assignor to J. K. Mitchell, Villanova, both in Pa.
1,927,729. **Tire and Rim.** J. D. Wyda, Glen Lyon, Pa.
1,927,751. **Hot Water Bag Cover.** J. E. Mensi, Memphis, Tenn.
1,927,801. **Tire.** T. D. Maus, assignor to Firestone Tire & Rubber Co., both of Akron, O.
1,927,808. **Shock Insulator.** C. Saurer and I. W. Robertson, assignors to Firestone Tire & Rubber Co., all of Akron, O.

Dominion of Canada

333,747. **Flexible Gasket.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of E. E. Hewitt, Edgewood, Pa., U. S. A.
333,748. **Pipe Coupling.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of E. E. Hewitt, Edgewood, Pa., U. S. A.
333,753. **Bottle Closure.** Crown Cork & Seal Co., Inc., assignee of C. E. McManus, both of Baltimore, Md., U. S. A.
333,755. **Air Chuck.** Dill Mfg. Co., Cleveland, assignee of J. C. Crowley, Cleveland Heights, both in O., U. S. A.
333,783. **Spare Tire Side Plate.** Lyon, Inc., Asbury Park, assignee of G. A. Lyon, Allenhurst, both in N. J., U. S. A.
333,830. **Door Dovetail and Bumper.** Ternstedt Mfg. Co., Detroit, assignee of H. B. Haskins, Highland Park, and E. G. Simpson, Detroit, co-inventors, all in Mich., U. S. A.
333,892. **Golf Club Grip.** L. A. Young, Detroit, Mich., U. S. A.
333,893. **Window Sash.** Adlake Co., Chicago, Ill., assignee of W. S. Hamm, Elkhart, Ind., both in the U. S. A.
333,920. **Cooling Unit.** Copeman Laboratories Co., assignee of L. G. Copeman, both of Flint, Mich., U. S. A.
334,005. **Tire Safety Valve.** J. A. Y. Jubinville, Laprairie, P. Q.
334,012. **Milking Machine Teat Cup.** J. and A. Persoons, co-inventors, both of Thildonck, Belgium.
334,031. **Shaving Brush.** H. Depasse, Neuilly-sur-Seine, France.
334,042. **Shower Apparatus.** M. Fraser, Toronto, Ont.
334,043. **Bathing Shoe.** W. M. Gallagher, Vancouver, B. C.
334,044. **Bathing Cap.** W. M. Gallagher, Vancouver, B. C.
334,064 and 334,065. **Gun Stock Recoil Pad.** W. W. Knight, Cicero, Ill., U. S. A.
334,077. **Feeding Bottle.** D. J. McOmish, Hampton, Victoria, Australia.
334,085. **Flush Valve.** W. E. Sloan, Chicago, Ill., U. S. A.
334,089. **Collar.** F. H. Taber, New Bedford, Mass., U. S. A.
334,244. **Artificial Leg.** Z. Dessains, Rivière du Loup, P. Q.
334,276. **Tire.** J. J. E. Sloan, Liverpool, England.
334,332. **Frost Shield.** Durkee-Atwood Co., assignee of A. W. Kile, both of Minneapolis, Minn., U. S. A.
334,415. **Motor Cycle Saddle.** H. and J. Jelley, co-inventors, both of Birmingham, England.
334,454. **Pencil Tip Eraser.** C. N. Wade, Paterson, N. J., U. S. A.
334,576. **Brake Element.** S. C. Clark, Pontiac, Mich., assignee of F. C. Morris, San Francisco, Calif., both in the U. S. A.
334,622. **Kneeling Pad.** W. Johnston, Vancouver, B. C.
334,631. **Window Guide Channel.** C. J. McKinney, Detroit, Mich., U. S. A.
334,645. **Vehicle Pneumatic Wheel.** A. L. Seabra, Sao Paulo, Brazil.
334,691. **Chair Tip.** Clarin Mfg. Co., Chicago, assignee of F. Grant, formerly of Harvey, both in Ill., U. S. A.
334,720. **Pedal Pad.** Kastar Specialty Mfg. Co., Inc., New York, assignee of H. Lambert, Brooklyn, both in N. Y., U. S. A.
334,721. **Elastic Fabric.** James R. Kendrick Co., Inc., assignee of W. J. Fox, both of Philadelphia, Pa., U. S. A.
334,779. **Wringer Roll.** S. S. Holland,

inventor, and O. Reiger, assignee of ½ of the interest, both of Kansas City, Mo., U. S. A.

334,850. **Door Knob Name Plate Holder.** L. R. Rooney, Meadville, Pa., U. S. A.

334,859. **Step Mat.** A. Sturrock, Victoria, B. C.

334,901 and 334,902. **Bottle Cap.** Crown Cork & Seal Co., Inc., assignee of A. H. Warth, both of Baltimore, Md., U. S. A.

334,938. **Railway Vehicle Tire.** Michelin & Cie., Clermont-Ferrand, Puy-de-Dome, assignee of P. M. Bourdon, Paris, both in France.

335,010. **Internal Combustion Engine.** H. Austin, Bromsgrove, England.

United Kingdom

391,671. **Head Supporting Pad.** J. T. Mulligan, Cork, Irish Free State.

392,129. **Wearing Apparel.** F. M. Sinclair-Burgess, E. Brunswick, Victoria, Australia.

392,504. **Household Glove.** K. Grote, Lubeck, Germany.

392,550. **Cellular Structure.** H. Ramsden, Yorkshire.

392,573. **Loudspeaker.** H. R. Ronnebeck, London.

392,576. **Footwear.** H. Broomfield, Northamptonshire, and F. E. Rice, Northampton.

392,625. **Electric Hearing Apparatus.** A. Von Suchorzynski, Silesia, Germany.

392,704. **Spring.** G. H. Schieferstein, Berlin, Germany.

392,705. **Traffic Signal.** S. Eaton, Liverpool.

392,726. **Vehicle Traffic Signal.** E. Brandt, Geneva, Switzerland.

392,752. **Tire Cover.** A. Miller, Thurso, Scotland.

392,779. **Surgical Cooling Appliance.** British Thomson-Houston Co., Ltd., London, assignee of T. H. Swisher, Scotia, N. Y., U. S. A.

392,786. **Ampoule.** M. Novak, Baden, Germany.

392,847. **Electrotherapeutic Apparatus.** J. Kellner, Brünn, Czechoslovakia.

392,877. **Spoon.** W. Busch, Hindenburg, Germany.

392,936. **Burglar Alarm.** J. Pearson and W. Bainton, both of Manchester.

392,949. **Resilient Engine Mounting.** R. S. Trott, Denver, Colo., U. S. A.

392,994. **Latex-Joined Carpet.** K. H. Hackländer, Rhineland, Germany.

393,044. **Abdominal Belt.** A. Whiting, (known as Tillman), Surrey.

393,104. **Door Stop.** Ternstedt Mfg. Co., Detroit, assignee of H. B. Haskins, Highland Park, and E. G. Simpson, Detroit, all in Mich., U. S. A.

393,199. **Box.** P. M. Robinson and Robinson & Sons, Ltd., both of Derbyshire.

393,236. **Thermometer Case.** H. H. and R. O. Zeal, both of London.

393,241. **Washing Dolly.** F. E. Krauss, Saxony, Germany.

393,259. **Heat Nonconducting Covering.** Soc. Belge Du Caoutchouc Mousse, Berchem-Ste-Agathe, Belgium.

393,268 and 393,269. **Adhesive.** E. Gore-Lloyd, Shepperton-on-Thames.

393,292. **Cable.** H. Sonnenfeld, Bratislava, Czechoslovakia.

393,301. **Ticket Printing Machine.** A. W. Wood, London.

393,312. **Tire Casing.** India-Rubber, Gutta Percha & Telegraph Works Co., Ltd., and F. J. Tarris, London.

393,340. **Coated Fabric.** Springfield Mills (Radcliffe), Ltd., and L. Kay, both of Lancashire.

393,394. **Elastic Fabric.** C. Clutsom, Leicestershire.

393,502. **Hand Stamp.** E. Tietze, Leipzig, Germany.

393,506. **Tire Antiskid Device.** R. Haddan, London. (Columbian Rope Co., Auburn, N. Y., U. S. A.)

393,514. **Artificial Bait.** L. H. C. Perrot, Paris, France.

393,557. **Massage Appliance.** L. R. Lacy, London.

393,572. **Tire Deflation Indicator.** Dunlop Rubber Co., Ltd., London, and F. Fellowes and R. F. Daw, both of Birmingham.

394,256. **Wrapper Sealing Means.** A. G. S. Lindgren, Gothenburg, Sweden.

Germany

583,592. **Pessary.** H. Peter, Karlsruhe.

583,719. **Dental Plate.** L. Larl, Berlin.

584,260. **Flexible Tube.** Gas Light & Coke Co., J. G. Clark, and C. A. Masterman, all of London, England. Represented by W. Schwaebsch, Stuttgart.

584,268. **Heel.** H. Dresing, Bad Oeynhausen.

584,924. **Motor Vehicle Spring.** Continental Gummi-Werke A.G., Hannover.

585,391. **Tire Tread.** E. Goltstein, Rheydt.

TRADE MARKS

United States

305,715. **Bambino.** Baby pants. I. B. Kleinert Rubber Co., New York, N. Y.

305,735. **Anodex.** Household gloves. American Anode, Inc., Akron, O.

305,804. **Lactron.** Rubber thread. United States Rubber Products, Inc., New York, N. Y.

305,824. **Fastidia.** Elastic webbing. H. W. Gossard Co., Chicago, Ill.

305,825. **Sturdee.** Soles. Serton Rubber Co., Dayton, O.

305,912. **Dila-Spray.** Syringes. Youngs Rubber Corp., Inc., New York, N. Y.

305,953. **National Tire Service.** Tires, inner tubes, belting, tire and tube patches, valve bases, rubberized fabrics, hose, and tire flaps. National Tire Stores, Inc., Denver, Colo.

305,972. **Gaskellac.** Cement. Puritan Soap Co., Rochester, N. Y.

306,041. Outline of the United States containing the word: **"Allstate."** Bulbs, supporters, teething rings, rubber gloves, etc. Sears, Roebuck & Co., Chicago, Ill.

306,051. Label containing the word: **"Hornsco."** Elastic supporters, etc. Horn Surgical Co., Philadelphia, Pa.

306,076. **Ring Leader.** Jar rings. Jenkins Bros., New York, N. Y.

306,085. Shield containing the letter: **"F."** Tire covers, brake lining, gaskets, hose, valve stems, belting, plugs, and tire repair kits and contents thereof. Firestone Tire & Rubber Co., Akron, O.

306,089. **Texrope.** Belting. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

306,115. **Endurance.** Tires and tubes. United States Rubber Co., New York, N. Y.

306,121. **Hiway.** Brake linings and clutch facings. Raybestos-Manhattan, Inc., Passaic, N. J.

306,122. **Grey-Rock Hiway.** Brake linings and clutch facings. Raybestos-Manhattan, Inc., Passaic, N. J.

306,178. **Listerine.** Atomizers. Lambert Pharmacal Co., Wilmington, Del.

306,247. **Ensign.** Tires and tubes. Gillette Rubber Co., Eau Claire, Wis.

306,258. Rectangle containing diamond and the word: **"Durolite."** Table and counter tops. D. M. Goodrich, New York, N. Y.

306,292. **Sani+Lastic.** Bandages. Rainbow Rubber Co., E. Butler, Pa.

306,334. **Firestone.** Tire covers, brake linings, gaskets, hose, valve stems, belting, plugs, and tire repair kits and contents thereof. Firestone Tire & Rubber Co., Akron, O.

306,339. **Best & Co.** Rubber balls and toys and golf tee holders. Best & Co., Inc., New York, N. Y.

306,380. **Supertwist.** Hose. Goodyear Tire & Rubber Co., Akron, O.

306,404. Contrasting-color diamond in body of ring. Jar rings. Jenkins Bros., New York, N. Y.

306,434. Double circle containing the words: **"Roll-ee by De Luxe Trade Mark — Stretches every direction."** Girdles and corsets. Sturm & Scheinberg, Inc., New York, N. Y.

306,482. **Prol.** Tire repair kits and supplies therefor. R. H. Churchill, doing business as Producers, Ltd., Chicago, Ill.

306,484. **Hygeen Insole.** Footwear. Hood Rubber Co., Inc., Watertown, Mass.

306,540. **Ponch-O-Hood.** Waterproof garments. Alligator Co., St. Louis, Mo.

U. S. Crude and Waste Rubber Imports for 1933

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1933	Totals 1932	Balata	Miscellaneous	Waste
Jan. .....*tons*	30,123	680	297	10	..	..	..	31,110	31,298	8	516	..
Feb.	18,407	246	217	5	..	..	..	18,875	30,546	16	483	1
Mar.	27,074	528	269	8	..	..	..	27,879	42,382	49	836	..
Apr.	18,436	654	369	..	..	..	..	19,459	37,017	14	463	10
May	26,770	629	147	10	..	..	..	27,556	32,224	47	628	..
June	22,086	451	192	..	..	..	..	22,729	41,394	463	574	..
July	43,155	502	631	2	..	..	..	44,290	31,078	356	646	..
Aug.	43,524	710	568	..	..	..	..	44,802	34,219	68	801	2
Sept.	45,817	1,043	492	..	..	..	..	47,352	29,509	79	1,116	80
Total, 9 mos., 1933.....*tons*	275,392	5,443	3,182	35	..	..	..	284,052	.....	1,100	6,063	93
Total, 9 mos., 1932.....*tons*	306,203	2,422	917	125	..	..	..	.....	309,667	442	4,854	114

Compiled from The Rubber Manufacturers Association, Inc., statistics.

Market Reviews

CRUDE RUBBER

BRISK trading the first week of October carried prices up about 50 points, but in the next 3 weeks prices lost about 150 points.

The gain was due to restriction news as it looked as though the long-awaited plan was not far off. A warning by the Governor of the Federated Malay States against too much optimism pointed out that lack of cooperation by the Dutch had disrupted previous efforts and that Malay would take no steps until assured that the Dutch would meet the British at least half way.

Faced with another protracted delay on restriction, with heavy imports, and with declines in other commodities, rubber prices naturally weakened. September imports were 47,352 tons against consumption of 35,686 tons. Stocks afloat to this country were 54,525 tons, and stocks on hand, 334,637 tons. Dealers' stocks in the Far East totaled 40,349 tons. All this means that any upturn in rubber due to sympathy with other markets is no real improvement, and until the over-supply of raw material is governed in some way, the outlook will not change materially.

Business in the Outside Market was good early in the month before the disappointing delay in restriction was announced. As long as factory buyers feel that prices will remain near present or lower levels and that there will be no sudden upturn due to curtailment of output, they will buy only enough rubber to meet current requirements. Prices were shaded by almost ½¢ in the latter part of the month, but takings were nominal.

Week ended September 30. After selling off about 35 points the first of the week, prices gained 73 to 104 points on Friday and Saturday, closing the week with advances of 45 to 59 points. Trading hit a low of 1,530 long tons on Thursday, but Friday's rally raised the total to 6,630 long tons, with 4,750 on Saturday. Most of the gain was ascribed to favorable restriction news and to a better tone in outside markets.

RUBBER BULL POINTS

1. **September rubber consumption, though below August's, was far above that of a year ago. September it was 35,686 tons, against 44,939 in August, and 23,847 in September, 1932.**
2. **Nine months' consumption was 315,533 tons, against 268,468 in the same 1932 period.**
3. **The Dutch, continuing restriction negotiations, plan to submit a definite proposal to the government late in November.**
4. **Sale and output of automobiles held up well in October, showing less than the usual seasonal decline.**
5. **Shipments of pneumatic casings in August, at 4,707,085 units, were 14.4% below July, but 77.3% above August, 1932.**
6. **August production of casings was 4,993,609, 12.6% less than in July, but 61.6% over August, 1932.**
7. **August exports of automobiles amounted to $8,327,485, the best since January, 1933, and 49% above August, 1932.**

RUBBER BEAR POINTS

1. **Rubber imports in September were 47,352 tons, 5.7% above August and 60.5% above September, 1932.**
2. **On September 30, United States rubber stocks were 334,637 tons, against 325,418 on August 31, and 3.3% less than September, 1932, stocks.**
3. **Crude rubber afloat to the United States on September 30 was 54,525 tons, against 53,084 on August 31 and 46,188 on September 30, 1932.**
4. **Dealers' stocks in the Far East totaled 40,349 tons on September 30, compared with 41,495 on August 30 and 23,678 on September 30, 1932.**
5. **Malay shipments in September totaled 49,607 tons, against 52,436 in August and 41,973 in September, 1932.**
6. **Pneumatic casings in the hands of manufacturers on August 31 amounted to 7,069,574 units, 3.3% above the previous month and 6.2% above the previous year.**

The October position closed at 8.45¢, compared with 8.00¢ last week; December 8.70 against 8.20; January 8.85 against 8.38; March 9.17 against 8.68; and May 9.55 against 8.96.

The restriction news concerned a meeting of European and native producers from Banjermassin, Martopoera, and Pherhari districts, where 50% reduction in output was agreed upon, in which the native producers concurred. This attitude encouraged the Dutch and British governments, who feared that any plan would be upset by lack of native cooperation.

Following that cable, was an announcement in a London newspaper that 6 rubber growers would leave for Holland to represent the Rubber Growers' Association on restriction. Full import of these advices was not realized until the week-end when the price reversal took effect. The lead for the advance was taken from London where quotations were firmer and where sterling prices showed more strength.

The Outside Market was dull, but sales improved with the increased prices and restriction news.

Prices on ribbed smoked sheets improved after the week-end rally. November-December contracts sold at 8⅛¢, compared with 7⅞¢ the week before; January-March 8⅜ against 8⅛; and April-June 8⅝ against 8⅜.

Week ended October 7. A warning by the Governor of the Malay States for cautious interpretation of restriction news, early in the week sent rubber down. The only gain in prices was made on Wednesday, but the market fell back again.

For the week prices were from 63 to 81 points lower. December closed at 8.07¢, compared with 8.70¢ the week before; January 8.22 against 8.85; March 8.51 against 9.17; May 8.75 against 9.55; and July 8.98 against 9.79.

Governor Sir Cecil Clementi, of the Federated Malay States, said the following in a speech to the Malay Legislature on Monday:

"The administration adheres to its determination not to initiate proposals, because the main crux is native production in the Dutch East Indies. Therefore, until a solution is pronounced practicable by the Dutch, it is premature for Malay to take action.

"If the Dutch formulate an equitable scheme, and guarantee that it will be effective in Dutch territory, then the Malayan administration would have every desire to cooperate. But it is essential for the scheme to comprise all producers, including the French and Belgian. The Malayan administration still believes the ultimate solution is to be found only in improved world trade and new uses for rubber."

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	September, 1933						October, 1933																	
	25	26	27	28	29	30	2	3	4	5	6	7	9	10	11	12*	13	14	16	17	18	19	20	21
Ribbed Smoked Sheet..	7¾	7⅝	7⅝	7½	7¾	8¼	7⅞	7⅝	7⅞	7¾	8	8	7⅞	7⅞	7⅞	...	7⅝	7⅝	7	7⅛	7⅛	6⅞	7	7
No. 1 Thin Latex Crepe	8½	8½	8½	8⅜	8⅝	9⅛	8¾	8½	8¾	8⅝	8⅞	8⅞	8¾	8¾	8¾	...	8½	8½	8	8⅛	8⅛	7¾	7⅞	7⅞
No. 1 Thick Latex Crepe	8⅜	8⅜	8⅜	8¼	8⅜	8⅞	8½	8¼	8½	8⅜	8⅝	8⅝	8½	8½	8½	...	8¼	8¼	7⅞	8	8	7⅝	7¾	7¾
No. 1 Brown Crepe...	5¾	5¾	5¾	5⅝	5¾	6¼	5⅞	5⅝	5⅞	5¾	5⅞	5⅞	5¾	5¾	5¾	...	5½	5½	5	5⅛	5⅛	5	5⅛	5⅛
No. 2 Brown Crepe...	5⅝	5⅝	5⅝	5½	5⅝	6⅛	5¾	5½	5¾	5⅝	5¾	5¾	5⅝	5⅝	5⅝	...	5⅜	5⅜	4⅞	5	5	4⅞	5	5
No. 2 Amber.....	5¾	5¾	5¾	5⅝	5¾	6¼	5⅞	5⅝	5⅞	5¾	5⅞	5⅞	5¾	5¾	5¾	...	5½	5½	5	5⅛	5⅛	5	5⅛	5⅛
No. 3 Amber	5⅝	5⅝	5⅝	5½	5⅝	6⅛	5¾	5½	5¾	5⅝	5¾	5¾	5⅝	5⅝	5⅝	...	5⅜	5⅜	4⅞	5	5	4⅞	5	5
No. 4 Amber	5⅜	5⅜	5⅜	5¼	5⅜	5⅞	5½	5¼	5½	5⅜	5½	5½	5⅜	5⅜	5⅜	...	5⅛	5⅛	4⅝	4¾	4¾	4⅝	4¾	4¾
Rolled Brown	4⅝	4⅝	4⅝	4½	4⅝	5⅛	4¾	4½	4¾	4⅝	4¾	4¾	4⅝	4⅝	4⅝	...	4⅜	4⅜	4	4⅛	4⅛	3⅞	4	4

*Holiday.

From the Dutch growers next day came cables declaring that an effort was being made to blame the Dutch in the event that excessive British demands nullified restriction efforts. Still, meetings continued at Batavia, Banjermassin, Amsterdam, and London, and a satisfactory plan may eventually be forthcoming.

September Malay shipments were 49,607 tons, compared with 52,436 in August, and 41,973 in September, 1932. These figures were discounted in advance and had no influence marketwise.

Output of automobiles for the September 30 week was 43,900 units, according to *Cram's Automotive Reports*, against 43,699 in the previous week and 14,505 in the same week last year. Step-ups by Ford and Chevrolet were responsible for the reversal of the seasonal trend. Production for September is put at 190,000 units, a drop of 22% from August, but a gain of 82% over September, 1932.

Prices in the Outside Market did much better than those on the exchange, more than holding their own. Factory and trade business was good, and interest was expressed in arrivals for the remainder of the year, at about 8¢.

October closed at 8¢, compared with 7⅞¢ the week before; November-December 8⅛ unchanged; January-March 8 1/16 against 8⅜; and April-June 8 1/16 against 8⅝.

Week ended October 14. Commission-house and speculative activity has gradually declined in the rubber market, with a consequent dullness in tone. The highest day's trading this week was on Friday when 3,930 long tons were traded. Prior to the Columbus Day holiday prices eased off somewhat, declining 19 to 35 points on Friday and a few more on Saturday. The announcement by the Treasury that part of the Liberty Bonds would be converted to a lower interest rate gave a blow to inflation hopes and affected adversely all commodity markets. Restriction news continues sporadically, with weight from important sources on the side of a limitation plan.

For the week prices declined from 28 to 43 points. October closed at 7.52¢ on Saturday, compared with 7.80¢ the previous week; December 7.71 against 8.07; January 7.86 against 8.22; March 8.15 against 8.51; May 8.35 against 8.75; and July 8.55 against 8.98.

Government officials of Sumatra and Borneo are expected to confer about restriction on November 22. At the annual meeting of Harrisons & Crosfield, Ltd., Eric Miller, chairman of the board, pointed out the probability that production would reach 1,000,000 tons annually with prices at about 4d to 4½d, concluding that some sort of scheme for regulation of output was decidedly necessary.

The Rubber Manufacturers Association, Inc., reported September consumption of crude rubber in the United States at 35,686 long tons, compared with 44,939 for August and 23,847 in September, 1932. Estimates had ranged from 30,000 to 35,000 tons.

Domestic stocks on September 30 totaled 334,637 long tons, compared with 325,418 the month before, but 3.3% below stocks on September 30, 1932. Crude rubber afloat for the United States on September 30 was 54,525 long tons, against 53,084 on August 31 and 46,188 on September 30, 1932.

If General Motors' figures are a criterion, manufacturers enjoyed good business in September. The company that month sold to consumers 71,458 cars, compared with 86,372 in August and 34,694 in September, 1932. For the first 9 months of this year 644,892 units were sold to United States consumers, against 450,347 in the same 1932 period.

Outside Market business was almost at a standstill during this week. The slight flurry in sales last week-end faded, and actuals prices went down from lack of interest.

October ribbed smoked sheets sold at 7 5/16¢, compared with 8¢ the week before; November-December 7¾ against 8⅛; January-March 8 against 8 1/16; and April-June 8¼ against 8 1/16.

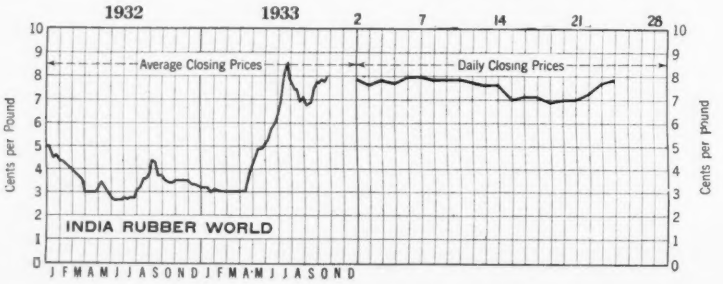
Week ended October 21. Except for the August tire figures developments in crude rubber were lacking during the past week so that declines in other commodities and in stocks weighed down heavily on rubber prices. The smallest day's trading was 5,110 tons on Wednesday, with 6,840 tons traded the day before, the only one to show a real gain. The biggest set-back to prices came on Monday when final quotations dropped 61 to 69 points. The government's rather definite indication last week that it would not resort to inflation started the decline in commodities which was broken Tuesday with large government purchases of cotton. But each time quotations slide lower, rumors that more currency is a necessity circulate, and the weakness of the dollar this week lent color to the speculations.

Prices for the week were from 41 to 50 points lower. October closed at 7.05¢, compared with 7.52 the week before; December 7.25 against 7.71; January 7.38 against 7.86; March 7.64 against 8.15; May 7.80 against 8.35; and July 8.05 against 8.55.

Shipments of pneumatic casings in August, at 4,707,085 units, were 14.4% less than in July, but 77.3% higher than in August, 1932, according to The Rubber Manufacturers Association, Inc.

Production was 4,993,609 casings in August, a drop of 12.6% from July, but 61.6% over August, 1932. Stocks on hand on August 31 were 7,069,574 cas-

(*Continued on next page*)



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

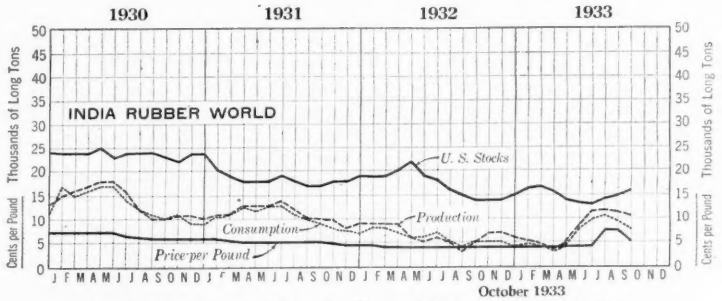
New York Quotations

New York outside market rubber quotations in cents per pound

	Oct. 26, 1932	Sept. 26, 1933	Oct. 25, 1933
Plantations			
Rubber latex....*gal.*	51	72	72
Sheet			
Ribbed, smoked, spot	3½/3 5/8	7 3/8/7 7/8	7 3/8/7½
Nov.-Dec.	3½/3 5/8	..	7½/7 5/8
Jan.-Mar.	3 1/8/3¾	7¾	7¾
Apr.-June	3¾/3 7/8	8	8
Crepe			
No. 1 thin latex, spot	4 1/8/4¼	8 1/8/8¼	8⅜
Nov.-Dec.	4 1/8/4¼	..	8⅜/8½
Jan.-Mar.	4¼/4⅜	8½/8 5/8	8 5/8
Apr.-June	4⅜/4½	8¾/8 7/8	8¾/8 7/8
No. 3 Amber, spot.	3 3/16/3¼	5½	5 3/8/5½
No. 1 Brown	3¼	5⅜	5½/5 5/8
Brown, rolled	2 7/8/3	4 3/8/4½	4⅜
Paras			
Upriver fine	7¼	8¾	8½
Upriver fine	*10¼	*11¾	*11¼
Upriver coarse	†3½	..	6
Upriver coarse	*4¾	*10	*10
Islands fine	†6½	..	..
Islands fine	*10	*11¾	*11
Acre, Bolivian fine.	7½	9	9
Acre, Bolivian fine.	*10½	*12	*11½
Beni, Bolivian	7½	9	9
Madeira fine	7¼	8¾	8¾
Pontianak			
Bandjermasin	5	7½	7
Pressed block	6¾	12	12
Sarawak	5	7½	7
Caucho			
Upper ball	†3½	..	6
Upper ball	*4¾	*10	*10
Lower ball	†3	..	..
Manicobas			
Manicoba, 30% guar.	†2½	†3¼	†3¾
Mangabiera, thin sheet	..	..	..
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	3¾	11	11
Black Kassai	6½	9	9
Manihot cuttings	3½	..	..
Prime Niger flake	15	20	20
Gutta Percha			
Gutta Siak	6¾	13	12
Gutta Soh	14	15	14
Red Macassar	1.25	1.50	1.35
Balata			
Block, Ciudad Bolivar	16	30	30
Manaos block	16	30	30
Surinam sheets	26	40	38
Amber	29	42	40

*Washed and dried crepe. Shipments from Brazil. †Nominal.

RECLAIMED RUBBER



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1930	157,967	153,497	41.5	24,008	9,468
1931	132,462	125,001	35.7	19,257	6,971
1932	75,656	77,500	23.3	21,714	3,536
1933					
January	5,301	4,811	21.0	16,262	130
February	4,578	4,363	20.2	16,570	178
March	3,847	3,454	19.1	15,496	353
April	4,617	4,407	16.8	14,370	165
May	8,366	7,770	17.4	13,734	319
June	10,591	9,674	18.8	13,231	223
July	12,049	10,327	20.6	14,108	507
August	11,708	9,446	21.0	15,037	353
September	10,435	7,862	22.0	15,869	367

* Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

CONSUMERS' demand for reclaims fell off to normal proportions in October, after the rush of August and September to secure supplies before the rise in prices. The firming up in the price of rubber scrap indicates that reclaims may follow the same course. Reclaimers are forestalling the increase in scrap prices and, consequently, are actively acquiring stocks. They are not actively seeking sales of reclaim at current levels in view of probable price increases now in prospect.

All quotations remain unchanged.

New York Quotations

October 25, 1933

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	7 /7½
red	1.20	6½/6¾
Auto Tire		
Black	1.21	4¾/5
Black selected tires	1.18	5 /5¼
Dark gray	1.35	5¾/6
White	1.40	7 /7¼
Shoe		
Unwashed	1.60	6¼/6¾
Washed	1.50	8 /9
Tube		
No. 1	1.00	11 /
No. 2	1.10	6¼/6½
Truck Tire		
Truck tire, heavy gravity	1.55	5¾/6
Truck tire, light gravity	1.40	6 /6¼
Miscellaneous		
Mechanical blends	1.60	4 /4¼

Crude Rubber

(*Continued from preceding page*)

ings, 3.3% above those on July 31 and 6.2% above those on August 31, 1932.

The downward trend usual in automobile sales and production at this season of the year is manifest, but not so severe as in other years. Last week's output was 36,753 units, a drop of 233 cars from the week before, but far above last year's figure of 12,444 automobiles. Less retail sales are expected in September; yet the decline probably will be smaller than that registered in the last 3 years in the same period.

Actuals lost ground in the Outside Market last week, with buying slow. The fluctuations in the dollar caused some adjustment in price both here and in London, but most of the decline was caused by weakness in other commodity markets here. The feeling has grown that restriction may be quite a while in coming; consequently factory buyers are in no great rush to stock up.

October ribbed smoked sheets closed at 7 1/16¢, against 7 5/8 the week previous; November-December 7 1/8 against 7 3/4; January-March 7 3/8 against 8; and April-June 7 5/8 against 8 1/4.

Optimism followed the President's message delivered to the country Sunday night, and all commodity and stock markets registered good gains on October 23. Rubber prices were up by 19 to 29 points from Saturday, with December at 7.50¢, against 7.25 on Saturday; March 7.85 against 7.64; and July 8.34 against 8.05.

Although buying was limited on the Outside Market, prices firmed up considerably. Nearbys sold at 7 3/8; January-March 7 11/16; and April-June 7 13/16.

The features of the market on October 25 were short covering and the acquiring of futures by traders. At the close December showed gains of 9 to 20 points. There was considerable trading between dealers in spot and nearby rubber, and spot standard ribs gained 1/16¢ and futures about 1/8¢.

RUBBER SCRAP

THE demand in October for rubber scrap was better than in September, and prices on certain grades advanced slightly owing to the NRA blanket code, which has affected the labor costs of collecting. Consumers have been stocking scrap at low prices both because of their contracts for forward deliveries and as speculation in prospect of probable advances in price.

BOOTS AND SHOES. Trade in these grades is well maintained at price levels unchanged from one month ago.

INNER TUBES. The export demand held inner tubes firm and unchanged for all grades except "mixed," which rose 1/4¢.

TIRES. The market for tires assumed a firmer tone on most descriptions. The exception was black auto peelings, which declined 50¢ a ton.

SOLID TIRES. Solids met with good export demand. The price of "clean mixed" grade is quoted with a narrower spread than one month ago, the figures being $30 to $32 per ton instead of $30 to $33. That of "light gravity" declined $2 a ton.

MECHANICALS. The demand for all qualities of mechanical scrap is reported fair. Hose scrap grades have all advanced $1 a ton. The others remain unchanged.

HARD RUBBER. No. 1 hard rubber scrap remains firm and moderately active.

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

October 25, 1933

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01¼/$0.01½
Colored	lb.	.01 / .01¼
Untrimmed arctics	lb.	.01 / .01¼
Inner Tubes		
No. 1, floating	lb.	.05 / .05¼
No. 2, compound	lb.	.02¾/ .02⅞
Red	lb.	.02¾/ .02⅞
Mixed tubes	lb.	.02⅜/ .02½
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	11.25 /11.50
Beadless	ton	16.50 /16.75
Auto tire carcass	ton	12.00 /13.00
Black auto peelings	ton	18.00 /19.00
Solid		
Clean mixed truck	ton	30.00 /32.00
Light gravity	ton	38.00 /40.00
Mechanicals		
Mixed black scrap	lb.	.01 / .01¼
Hose, air brake	ton	11.00 /12.00
Garden, rubber covered	ton	10.00 /11.00
Steam and water, soft	ton	10.00 /11.00
No. 1 red	lb.	.01½/ .01⅝
No. 2 red	lb.	.01 / .01¼
White druggists' sundries	lb.	.01¾/ .01⅞
Mechanical	lb.	.01¼/ .01½
Hard Rubber		
No. 1 hard rubber	lb.	.07¾/ .08

COMPOUNDING INGREDIENTS

ACCELERATORS AND ANTIOXIDANTS. Since September 1 these chemicals moved considerably slower than during July and August, but they are still running far ahead of this time a year ago. Values are practically unchanged as yet although many prices will probably have to be revised upward at the end of this year. The increased costs, due to operating under the code, were masked during July and August by the sharp increase in production, which reduced the overhead cost by spreading it over a larger tonnage. After the first of the year raw material costs will be higher as in most cases suppliers will not extend contracts at current levels beyond December 31.

The new age resister, Flectol-H, is now available. It is the powder form of the liquid age resister, Flectol-B.

CARBON BLACK. The situation on carbon black continues to mark time with very satisfactory consumption during the summer. Current demand has slackened somewhat, but is still slightly in advance of production. In the meantime stocks have been very much depleted so that the industry will end the year in much better shape than for some time past.

Carbon black has for some time been sold at less than the cost of production; so in the near future this uneconomic condition will probably be corrected conservatively.

COLORS. The prices for rubber colors are exceedingly firm and their severe stiffening is probable in future quotations under NRA influence.

FACTICE. The situation in regard to the trade situation of factice, otherwise rubber substitute, has not changed in the past month. The demand is slow, and the market steady.

LITHARGE. The price of the commercial grade, which remained steady all summer at 7¢, has since experienced 2 declines of ¼¢ each, the first on October 17 and the second on October 19, bringing the level to 6½¢.

LITHOPONE. Prices remain unchanged, and the demand moderate and steady.

RUBBER SOLVENTS. Early in October heavy and light grades were reduced ⅛¢ a gallon at Group 3 refineries, followed by active contract movement of stocks. During the week ended October 21 the price was advanced ⅛¢. The price of 6¼¢ was limited to tank car quantities.

RUBBER VARNISH. In the past 90 days the demand for lacquer and finishing materials by the rubber industry improved. Prices remained very stationary, with a slight tendency to advance owing to changes in cost of some raw materials. October business slowed up.

TITANIUM PIGMENTS. The demand continues steady for titanium pigments by the rubber industry, particularly for pure oxide and the calcium base. The latter is going into the white footwear trade in substantial and steadily increasing tonnages. Monthly shipments are regularly exceeding those of the corresponding months of 1932. There is no change in prices, which are anticipated to remain firm for the rest of the year, beyond which period contracts are not being accepted.

New York Quotations

October 25, 1933

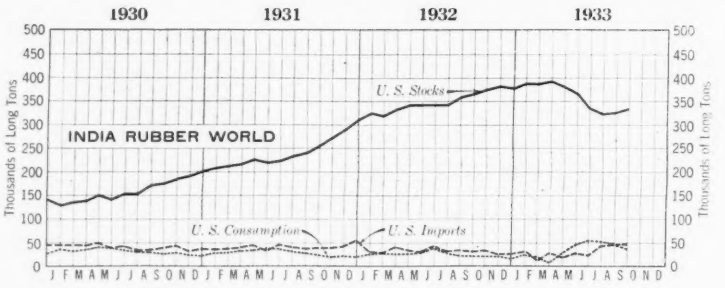
Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, pwd.	lb.	$0.02½/$0.04
Rottenstone, domestic	ton	23.50 /28.00
Accelerators, Inorganic		
Lime, hydrated	ton	20.00
Litharge (commercial)	lb.	.06½
Magnesia, calcined, heavy	lb.	.04 / .04½
carbonate	lb.	.06 / .06¼
Accelerators, Inorganic		
A-1 (Thiocarbanilid)	lb.	.21 / .25
A-5-10	lb.	.33 / .36
A-7	lb.	.53 / .65
A-11	lb.	.60 / .75
A-16	lb.	.55 / .65
A-19	lb.	.56 / .75
A-32	lb.	.70 / .80
Accelerator 49	lb.	.38 / .48
Aldehyde ammonia	lb.	.65 / .70
Altax	lb.	
Anhydroformaldehyde-para-toluidine	lb.	
Barak	lb.	
Butene	lb.	
Captax	lb.	
Crylene	lb.	
paste	lb.	
DBA	lb.	
Di-esterex N.	lb.	
DOTG	lb.	.42 / .52
DPG	lb.	.33 / .43
du Pont 808	lb.	
833	lb.	
Ethylidine aniline	lb.	
Formaldehyde aniline	lb.	.37½/ .40
Guantal	lb.	.42 / .51
Heptene	lb.	
base	lb.	
Hexamethylenetetramine	lb.	.37
Lead oleate, No. 999	lb.	.11
Witco	lb.	.11
Lithex	lb.	
Monex	lb.	
Novex	lb.	
Pipsol X	lb.	3.55 / 4.00
Plastone	lb.	
R-2	lb.	1.55 / 1.90
base	lb.	4.55 / 5.00
R & H 40	lb.	
50-D	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tetrone A	lb.	
Thio	lb.	
Thiocarbanilid	lb.	.20
Thionex	lb.	
Trimene	lb.	
base	lb.	
Triphenyl guanidine	lb.	$0.58 /$0.60
Tuads	lb.	
Ureka	lb.	.62 / 1.00
C	lb.	.58 / .69
Vulcanex	lb.	
Vulcanol	lb.	
Vulcone	lb.	
ZBX	lb.	
Z-88-P	lb.	.48 / .60
Zimate	lb.	
Acids		
Acetic 28% (bbls.)	100 lbs.	2.91 / 3.16
glacial (carboys)	100 lbs.	10.52 /10.77
Sulphuric, 66°	ton	15.50
Age Resisters		
Age-Rite Gel	lb.	
powder	lb.	
resin	lb.	
white	lb.	
Albasan	lb.	
Antox	lb.	
BLE	lb.	
Flectol A	lb.	.54 / .60
B	lb.	.54 / .60
H	lb.	
Neozone	lb.	
Oxynone	lb.	.66 / .90
Parazone	lb.	
Permalux	lb.	
Resistox	lb.	.52 / .65
VGB	lb.	
Zalba	lb.	
Antiscorch Material		
UTB	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	
Binders, Fibrous		
Cotton flock, dark	lb.	.09 / .11¼
dyed	lb.	.50 / .80
white	lb.	.11¼/ .17
Rayon flock, colored	lb.	1.60 / 1.75
white	lb.	1.40
Colors		
BLACK		
Bone, powdered	lb.	.05½/ .15
Drop	lb.	.05½/ .17
Lampblack (commercial)	lb.	.08 / .14
BLUE		
Prussian	lb.	.35 / .37
Toners	lb.	.80 / 3.50
Ultramarine	lb.	.07 / 10
BROWN		
Mapico	lb.	$0.13
Sienna, Italian, raw, pwd.	lb.	.04½/$0.11
GREEN		
Chrome, light	lb.	.23 / .25½
medium	lb.	.26 / .27½
oxide	lb.	.19 / .21
Guignet's(bbls.)f.o.b.Easton	lb.	.70
Toners	lb.	.85 / 3.50
ORANGE		
Toners	lb.	.40 / 1.60
ORCHID		
Toners	lb.	1.50 / 2.00
PINK		
Toners	lb.	1.50 / 4.00
PURPLE		
Toners	lb.	.60 / 2.00
RED		
Antimony		
Crimson, R. M. P. No. 3	lb.	.46
Sulphur free	lb.	.48
7-A	lb.	.33
Z-2	lb.	.20
Iron Oxides		
Rub-er-red (bbls.) f.o.b. Easton	lb.	.08¾
Mapico	lb.	.08¾
Toners	lb.	.80 / 2.00
WHITE		
Lithopone (bags)	lb.	.04½/ .04¾
Albalith	lb.	.04½/ .04¾
Cryptone No. 19	lb.	.06 / .06¼
CB No. 21	lb.	.06 / .06¼
Titanium oxide, pure	lb.	.17 / .18¾
Titanox "B"	lb.	.06 / .06½
"C"	lb.	.06 / .06½
Zinc Oxide		
Black label (lead free)	lb.	.05¾
F. P. Florence, green seal	lb.	.09⅝/ .09⅞
red seal	lb.	.08⅝/ .08⅞
white seal (bbls.)	lb.	.10⅞
Green label (lead free)	lb.	.05¾
seal, Anaconda	lb.	.09⅝/ .10⅛
Horsehead (lead free) brand		
Selected	lb.	.05¾/ .06
Special	lb.	.05¾/ .06
XX	lb.	.05¾/ .06
red	lb.	.05¾/ .06
Kadox, black label	lb.	.09⅛/ .09¾
blue label	lb.	.08⅛/ .08¾
red label	lb.	.07¼/ .07½
Lehigh (leaded)	lb.	.0490/ .0515
Red label (lead free)	lb.	.05¾
seal, Anaconda	lb.	.08⅝/ .09¼
Standard (leaded)	lb.	.05⅝/ .05¾

Sterling (leaded)	lb.	$0.05½/$0.05¾
Superior (leaded)	lb.	.05½/ .05¾
U. S. P. (bbls.)	lb.	.12¾
White seal, Anaconda	lb.	.10⅞/ .11⅞
XX zinc sulphide (bbls.)	lb.	.13
YELLOW		
Chrome	lb.	.15
Mapico	lb.	.09½
Ochre, domestic	lb.	.01⅜/ .02⅝
Toners	lb.	2.50
Factice—See Rubber Substitutes		
Fillers, Inert		
Asbestine	ton	
Barytes (f.o.b. St. Louis)	ton	23.00
off color	ton	
white	ton	
Blanc fixe, dry, precip.	ton	70.00 /75.00
pulp	ton	42.50 /45.00
Infusorial earth	lb.	.03
Kalite No. 1	ton	
No. 3	ton	
Suprex, heavy	ton	45.00 /55.00
white, extra light	ton	60.00 /80.00
Whiting		
Chalk, precipitated	lb.	
Domestic	ton	
Hakuenka	lb.	
Paris white, English cliff-stone	100 lbs.	
Sussex	ton	
Witco	ton	20.00
Wood flour (factory)	ton	19.00 /50.00
Fillers for Pliability		
Flex	lb.	
Fumonex	lb.	.03 / .06
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.02 / .05
Finishes		
IVCO lacquer, clear	gal.	2.50 / 2.80
colors	gal.	2.60 / 3.25
Mica, amber	lb.	.05
Rubber lacquer No. 106	gal.	3.00
Starch, corn, pwd.	100 lbs.	2.67 / 2.87
potato	lb.	.05¼/ .06
Talc, dusting	ton	15.00 /20.00
Pyrax A	ton	
Latex Compounding Ingredients		
Accelerator 552	lb.	
Aquarex	lb.	
Aresco	lb.	.28 / .40
Catalpo	ton	
Colloidal color pastes	lb.	
sulphur	lb.	
zinc oxide	lb.	
Disinfectants	lb.	
Dispersaid	lb.	.35 / .50
Dispersed Antox	lb.	
factice	lb.	
Emo, brown	lb.	.07
white	lb.	.10
Emulsified Heliozone	lb.	
Neozone L	lb.	
Palmol	lb.	.08
Tepidone	lb.	
Mineral Rubber		
Genasco (fact'y)	ton	30.00 /32.00
Gilsonite (fact'y)	ton	37.14 /39.65
Granulated M. R.	ton	
Hydrocarbon, granulated	ton	40.00 /42.00
hard	ton	
Parmr Grade 1	ton	23.00 /28.00
Grade 2	ton	23.00 /28.00
Mold Lubricants		
Rusco mold paste	lb.	.12 / .30
Sericite	ton	
Soapbark (cut)	lb.	.07 / .08
Soapstone	ton	
Oils		
Castor, blown	lb.	.12¼/ .12¾
Poppyseed	gal.	1.45 / 1.60
Red, distilled (bbls.)	lb.	.07 / .07⅝
Protective Colloid		
Casein, domestic	lb.	.14 / .14½
Reenforcers		
Carbon Black		
Aerfloted arrow black	lb.	.02¾
Arrow specification black	lb.	.03
Century (La., c. l.)	lb.	.0272
Certified, Cabot, c. l., f. o. b. works, bags	lb.	.0272
c. l., f. o. b. works, cases	lb.	.04¼
l. c. l., f. o. b. works	lb.	.04¾/ .06½
Spheron (Dense Dustless Black) c. l., f. o. b. works	lb.	.0272
Disperso (La., c. l.)	lb.	.0272
Dixie brand	lb.	.0272/ .06½
Kosmos brand	lb.	.0272/ .06½
Micronex	lb.	.03 / .08
Ordinary (compressed or uncompressed)	lb.	.02¾
Clays		
Blue Ridge, dark	ton	
China	ton	6.50
Dixie	ton	
Langford	ton	
Par	ton	
Perfection	ton	$6.50
Standard	ton	
Suprex No. 1	ton	8.00
No. 2, dark	ton	6.50
Glue, high grade	lb.	.23 /$0.28
Reodorants		
Amora A	lb.	
B	lb.	
C	lb.	
D	lb.	
Para-Dors	lb.	
Rodo	lb.	
Rubber Substitutes or Factice		
Amberex	lb.	.13¾
Black	lb.	.06 / .08
Brown	lb.	.07 / .11
White	lb.	.07½/ .12
Softeners		
Burgundy pitch	lb.	.05
Cycline oil	gal.	.15 / .28
Fluxol	ton	
Hardwood pitch, c.l.	ton	24.00 /25.00
Palm oil (Witco)	lb.	.07
Petrolatum, light amber	lb.	.02½/ .02¾
Pine tar	gal.	.25
Plastogen	lb.	
Rosin oil, compounded	gal.	$0.30
Rubtack	lb.	.10
Tackol	lb.	.085 /$0.18
Tonox	lb.	
Witco Flux	gal.	.20
Solvents		
Benzol (90% drums)	gal.	.27
Bondogen	gal.	
Carbon bisulphide (drums)	lb.	.05½/ .12
tetrachloride	lb.	.05¼/ .06
Turpentine, steam distilled	gal.	.44 / .45
Stabilizers for Cure		
Laurex, ton lots	lb.	
Stearex B	lb.	.08¼/ .10
flake	lb.	.08 / .09
Stearic acid, dbl. pres'd	lb.	.10 / .14
Zinc stearate	lb.	
Vulcanizing Ingredients		
Sulphur		
Chloride, drums	lb.	.05
Flowers, extrafine refined, U.S.P.	100 lbs.	
Rubber	100 lbs.	1.85 / 2.45
Telloy	lb.	
Vandex	lb.	

(See also Colors—Antimony)

IMPORTS, CONSUMPTION, AND STOCKS



United States Stocks, Imports, and Consumption

CONSUMPTION of crude rubber by United States manufacturers for September totaled 35,686 long tons, against 44,939 long tons for August, a decrease of 20.6%, but 49.6% over the September, 1932, consumption figures of 23,847 long tons, according to the R. M. A. Consumption for the first 9 months of 1933 amounted to 315,533 long tons, compared with 268,468 long tons for the same period in 1932.

Crude rubber imports for September were 47,352 long tons, an increase of 5.7% over August and 60.5% above September, 1932.

The estimated total domestic stocks of crude rubber on hand September 30 were 334,637 long tons; August 31 stocks were 325,418 long tons. September stocks gained 2.8% as compared with August, but were 3.3% below stocks of September 30, 1932.

Crude rubber afloat for the United States ports totaled on September 30, 54,525 long tons, compared with 53,084 long tons on August 31 and 46,188 long tons on September 30, 1932.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
Sept. 30	39,221	56,164
Oct. 7	38,935	54,899
Oct. 14	38,565	54,134
Oct. 21	38,457	53,500

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	495,724
1932	400,787	322,000	379,000	38,360	92,567	36,802	709,860	670,250	518,187
1933									
January	31,110	22,906	385,811	32,539	89,050	35,746	63,951	52,120	521,173
February	18,875	21,638	381,794	32,898	90,172	34,354	56,056	54,900	518,166
March	27,879	18,047	390,135	29,531	94,565	34,089	61,932	59,100	518,812
April	19,459	26,226	382,167	30,745	95,066	33,520	57,180	61,300	510,753
May	27,556	44,580	364,623	43,342	98,538	37,876	67,050	76,840	501,037
June	22,729	51,326	333,954	63,608	102,451	46,412	62,330	74,110	482,817
July	44,290	50,184	326,609	57,435	99,859	53,179	74,078	76,200	479,646
August	44,802	44,939	325,418	53,084	96,623	51,110	73,954	79,230	473,151
September	47,352	35,686	334,637	54,525	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

COTTON AND FABRICS

FOR the 4 weeks ended October 21 cotton prices lost 87 to 115 points. The 2 most important factors of the decline were the increased government's estimate on the size of this year's crop and the delay in getting the Commodity Corp. into operation.

The increase of 471,000 bales in the crop estimate brings it only 17,000 bales under last year's; and since the yield per acre is of record proportions, many traders expect the final figure to equal or surpass that of 1932.

One favorable aspect of the declining prices has been to make it more profitable to growers who participate in the government loan plan. Ten cents a pound will be loaned to producers who agree to cut next year's acreage by 40% of their average production. While cotton was selling above 10¢ a pound, much hesitancy was evident, but with prices below 10¢ the arguments all favor cooperation.

The machinery for getting the loans passed has struck a snag; so growers still are ignorant of details. Money is needed in the South, and each week's delay means fewer planters are able to hold their cotton.

Alston H. Garside, economist of the New York Cotton Exchange, cited another difficulty. Foreign production is nearly 1,300,000 bales higher than last year's; so all efforts to curtail production may be nullified by the increase in foreign growths if the control of output is continued long enough.

Consumption has declined somewhat recently, and mills report that the old price wars are recurring despite the NRA code, especially in percale goods. With the government trying to peg prices at about 10¢, and with the 4½¢ processing tax, manufacturers will have to pay 15¢ a pound for raw material as soon as their stocks of cheap cotton are exhausted. The Liberty Loan conversion, interpreted as the administration's answer to currency inflation, caused further declines in cotton.

Week ended September 30. Cotton prices lost ground every day this week except on Saturday. Trading mostly was light. The crop movement normally is very large at this season, reaching its peak in October. The government's plan for loans at 10¢, which is now above the market price, has led some growers to withhold their cotton from the market. Saturday's small rally was due to trade buying and sympathy with the rise in stock prices. For the week quotations were from 24 to 34 points lower.

The October position closed at 9.69¢, compared with 9.93¢ the week before; December 9.92 against 10.19; January 10.01 against 10.25; March 10.17 against 10.40; May 10.32 against 10.59; and July 10.49 against 10.83.

Discovering that the Reconstruction Finance Corp. could not make loans to farmers without a 100% guarantee of repayment, the Agricultural Adjustment Administration decided to set up a private corporation with $400,000,000 of Federal funds to carry through the plan for loaning money on cotton on the basis of 10¢ a pound.

Another snag to cooperation with the plan was the fact that the loans were to be made on the basis of low middling ⅞-inch cotton. Planters who had better cotton than this grade were reluctant to fall in with the plan unless some change were made to compensate growers with better than low middling cotton.

Statistics for the week show that the movement into sight amounted to 638,000 bales, compared with 542,000 in the same 1932 week and 693,000 in 1931. Forwardings to mills of the world for the season to date totaled 152,000 bales, against 109,000 in 1932, and 114,000 in 1931.

The rise in forwardings to mills advanced *The New York Times'* index from 74.8 in the September 16 week to 76.8 in the September 23 week. The week's forwardings of 119,000 bales were the highest since the July 20 week this year. Demand for gray goods improved at the week-end, lifting prices after an easy tendency.

COTTON BULL POINTS

1. **The federal government will loan 10¢ a pound on cotton to producers who will cut their next crop 40%.**
2. **With cotton $8 to $10 a bale below the government lending figure in late October, prospects for acceptance of the government plan look bright.**
3. **Approximately $90,000,000 has been distributed to those who participated in the last acreage reduction program.**
4. **A movement is being started in the South for an increase to 20¢ a pound on advances to growers to enable them to hold their cotton for better prices.**
5. **September exports were 869,244 bales of lint, compared with 530,627 in August and 733,665 in September, 1932.**
6. **Exports so far this season are 1,923,000 bales, against 1,727,000 a year ago and 1,313,000, 2 years ago.**
7. **Forwardings to mills of the world now total 3,115,000 bales, against 2,800,000 last year and 2,600,000, 2 years ago.**
8. **Cotton on hand in consuming establishments and public storages was 8,535,013 bales on September 30 against 9,082,346 on the same date last year.**

COTTON BEAR POINTS

1. **The government's October 1 estimates put this year's crop at 12,885,000 bales, a rise of 471,000 bales from the September 1 report, and compared with 13,002,000 bales last year.**
2. **Private opinion is that the final crop will be close to that of last year.**
3. **September consumption was 499,486 bales, compared with 588,570 bales in August and 492,742 in September, 1932.**
4. **Movement of cotton into sight so far this season has been over 4,600,000 bales, against 4,000,000 a year ago.**
5. **The delay in the operation of the cotton loan plan has caused hesitation and lower market prices.**
6. **Total foreign production of cotton is put at 11,963,000 bales, against 10,676,000 last season, and a previous maximum of 11,881,000 bales.**
7. **Some shippers are reported to be advancing 8¢ a pound to growers, promising 2¢ more when government funds become available; this plan means planters can get 10¢ without promising to reduce acreage.**

Week ended October 7. Heavy marketing of the new crop made for large hedge sales in the last week, and up until Saturday, when the basis for making loans to cotton farmers was announced, the market was hesitant about the plan. Weather reports were good, and private estimates prior to the government's next report on Monday suggested an increased crop. Cotton lost ground steadily through these factors, but was firmer on Saturday following the publication of the details of the loaning plan. Losses for the week were from 44 to 56 points.

October closed at 9.25¢, compared with 9.69¢ the week before; December 9.42 against 9.92; January 9.50 against 10.01; March 9.66 against 10.17; May 9.82 against 10.32; and July 9.97 against 10.49.

The last government report put the crop at 12,414,000 bales. The average of 8 private estimates is 12,334,000 bales, compared with 12,250,000 a month ago. Members of the exchange put the crop at 12,568,000 bales, against 12,352,000 last month, which was close to the government figure. Estimate of ginning to October 1 amounted to 5,535,000 bales, against 4,836,000 last year to the same time. The amount of cotton on plantations was figured at 12,120,000 bales on September 1, compared with 13,794,000 a year ago and 17,086,000, 2 years ago.

The Commodity Corp. was the name given the new bureau for loaning money to cotton farmers. As Secretary Wallace explained the plan:

"Loans will be 10¢ a pound at the warehouse on cotton classing low middling or better as to grade, ⅞-inch or better as to staple, and 8¢ per pound on cotton classing low middling or better as to grade and under ⅞-inch as to staple.

"The loans will be available to farmers who agree to abide by the regulations and cooperate with the Secretary of Agriculture in the 1934 cotton-acreage reduction program, provided a reduction of not more than 40% of the average acreage will be required of any farmer.

"Farmers who sign and fulfill contracts to cooperate in the program will get their benefit payments in addition to the loans.

" . . . Loans will be subject to call at 15¢ a pound or better.

"The loan value will be stepped up at the rate of 45¢ a bale for each month after October. This will cover carrying charges and interest. The interest rate to farmers will be 4%."

Week ended October 14. An increase of 471,000 bales in the government's estimate of this year's crop above last month's figures was above the majority of private reports. The market acted well on Monday when the statistics were released; after a slight fall prices

climbed 40 points to close from 13 to 17 points higher for the day. Hedges increased in the market the next day and this condition, together with the expression of opinions that this year's crop would equal the 13,000,000-bale output of 1932, caused the market to ease off. After the holiday a rise in the price of the dollar after announcement of the Liberty Loan conversion made for further losses, and the market ended the week quietly with slight changes. As compared with the October 7 week, prices were down by 19 to 27 points.

October closed at 9.06¢, compared with 9.25¢ the week before; December 9.17 against 9.42; January 9.24 against 9.50; March 9.41 against 9.66; May 9.55 against 9.82; and July 9.70 against 9.97.

The 1933 production of cotton was set at 12,885,000 bales by the Department of Agriculture, compared with 12,414,000 estimated at September 1 and 13,002,000 a year ago. The condition of the crop was 66.7% of normal against the 10-year average of 57.1%. The yield per acre was 205.3 pounds, compared with the 10-year average of 167.4 pounds. Most of the increase was recorded in Texas, with a gain of 375,000 bales over last month. Foreign crops also will show large increases this year.

The Census Bureau reported September consumption of cotton at 499,486 bales of lint, compared with 588,570 bales in August and 492,742 in September, 1932. September exports were 869,244 bales of lint, compared with 530,627 in August this year and 733,665 in September, 1932.

Cotton forwardings for the October 7 week were 176,000 bales, against 158,000 the week before and 158,000 for the same week a year ago. Trading in the cloth market at present is low. It is pointed out that with the government practically pegging the price at 10¢ a pound for raw cotton, and the 4.2¢ a pound processing tax, finishers must pay close to 15¢ for their raw materials. Mills are unable to predict what the consumer response will be to the new prices, since goods made with 7¢ cotton is still being sold.

Week ended October 21. It was estimated that the government had bought 150,000 bales of cotton in the last week, which turned the market from its downward path. On Monday prices lost 40 to 48 points under heavy selling, but large federal orders on Tuesday wiped out the losses with gains of 57 to 54 points. The rise increased by 25 points more the next day, but a decline in stocks reacted on the cotton market to close it with losses of about 10 points. Weakness in the dollar aided the market later in the week, together with renewed rumors of inflation.

Cotton in the hands of growers was being held more closely at the week-end than recently, and opinion is that many planters will accept federal loans on their cotton. Hedging operations slowed down as a result of an effort to secure more than 10¢ a pound for cotton held by farmers promising to reduce next year's acreage.

Prices for the week were unchanged to 4 points higher. October closed at 9.07¢, compared with 9.06¢ the week before; December 9.21 against 9.17; January 9.25 against 9.24; March 9.42 against 9.41; May and July unchanged at 9.55 and 9.70¢ respectively.

At the close of the week March was 9.42¢, against 10.83¢ when the government first announced its plan for loans to those who promised acreage reduction. With the 10¢ loan cotton can be held for higher prices, and it is to the growers' advantage to cooperate.

The New York Cotton Exchange estimated forwardings to spinners in the last week at 240,000 bales, against 176,000 the week before and 202,000 in the same week a year ago. World takings by spinners this week were 415,000 bales, compared with 337,000 bales in the same week a year ago and 332,000, 2 years ago.

On October 23, after rising $1 a bale in the morning, cotton then sold off somewhat, only to show another rise in the afternoon. Firmness in Liverpool and the belief that higher prices would prevail following the President's message were the factors that helped prices to gain. At the close quotations were up from 7 to 13 points from Saturday's close. October was 9.20; January 9.35; March 9.50; and July 9.80.

On October 25 spot middling 7/8-inch cotton was 9.90¢, 20 points higher than on October 24. A year ago middling was 6.40¢.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Sept. 30	9.98
Oct. 7	9.72
Oct. 14	9.50
Oct. 21	9.32

New York Quotations

October 25, 1933

	Cents
Drills	
38-inch 2.00-yard ..... yd.	$0.15 3/8
40-inch 3.47-yard	.09 1/4
50-inch 1.52-yard	.22
52-inch 1.90 yard	.17 5/8
52-inch 2.20-yard	.16
52-inch 1.85-yard	.18
Ducks	
38-inch 2.00-yard D. F. ..... yd.	.15 1/2
40-inch 1.45-yard S. F.	.21 3/4
72-inch 1.05-yard D. F.	.31
72-inch 16.66-ounce	.33 1/2
72-inch 17.21-ounce	.34 2/8
MECHANICAL	
Hose and belting ..... lb.	.32 1/2
TENNIS	
52-inch 1.35-yard ..... yd.	.23 3/4
***Hollands**	
GOLD SEAL	
30-inch No. 72 ..... yd.	.19 1/2
40-inch No. 72	.21 1/2
RED SEAL	
30-inch ..... yd.	.17
40-inch	.18 1/2
50-inch	.24 1/2
Osnaburgs	
40-inch 2.34-yard ..... yd.	.13 1/4
40-inch 2.48-yard	.12 1/4
40-inch 3.00-yard	.10 1/8
40-inch 10-ounce part waste	.15 5/8
40-inch 7-ounce part waste	.10 1/2
37-inch 2.42-yard	.12 7/8
Raincoat Fabrics	
COTTON	
Bombazine 60 x 64 ..... yd.	.10 3/4
Bombazine 60 x 48	.10 1/4
Plaids 60 x 48	.11
Plaids 48 x 48	.10 1/2
Surface prints 60 x 64	.12 1/4
Surface prints 60 x 48	.11 3/4
Print cloth, 38 1/2-inch, 60 x 64	.06 5/8
Print cloth, 38 1/2-inch, 60 x 48	.05 1/2
SHEETINGS, 40-INCH	
48 x 48, 2.50-yard ..... yd.	.10 1/2
48 x 48, 2.85-yard	.08 7/8
64 x 68, 3.15-yard	.10 3/4
56 x 60, 3.60-yard	.09 3/8
44 x 48, 3.75-yard	.07 3/4
44 x 40, 4.25-yard	.07 1/4
SHEETINGS, 36-INCH	
48 x 48, 5.00-yard ..... yd.	.06
44 x 40, 6.15-yard	.04 7/8
Tire Fabrics	
BUILDER	
17 1/4 ounce 60" 23/11 ply Karded peeler ..... lb.	
17 1/4 ounce 60" 10/5 ply Karded peeler ..... lb.	.35
CHAFER	
14 ounce 60" 20/8 ply Karded peeler ..... lb.	.40
12 ounce 60" 10/4 ply Karded peeler ..... lb.	.35
9 1/4 ounce 60" 20/4 ply Karded peeler ..... lb.	.41
9 1/4 ounce 60" 10/2 ply Karded peeler ..... lb.	.36
CORD FABRICS	
23/5/3 Karded peeler, 1 1/8" cotton .. lb.	.43
23/4/3 Karded peeler, 1 1/8" cotton .. lb.	.44
15/3/3 Karded peeler, 1 1/8" cotton .. lb.	.41
13/3/3 Karded peeler, 1 1/8" cotton .. lb.	.40
7/2/2 Karded peeler, 1 1/8" cotton .. lb.	.38
25/5/3 Karded peeler, 1 1/4" cotton .. lb.	.50
23/5/3 Karded Egyptian, Egyptian upper cotton ..... lb.	.53
25/5/3 Combed Egyptian ..... lb.	.58
LENO BREAKER	
8 1/4 ounce and 10 1/4 ounce 60" Karded peeler ..... lb.	.35

*Prices for 1,200 yards of a width or over.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. A slightly improved price position has developed. The smaller consumers remain out of the market, but some excellent buying is coming because large factors are covering a substantial percentage of their requirements for distribution over the next 6 months. Prices are on an attractive basis that will attract the interest of those capable of judging values. A slowly improving market and a scarcity of fabrics are expected.

RAINCOAT FABRICS. The fall raincoat season is about over, and manufacturers have not been doing much business during the past 3 weeks. This condition is unusual as fall business generally continues until November 1. Work has begun on Christmas business and the preparation of new lines for next spring's trade.

SHEETINGS. The market has stood still for the past 4 or 5 weeks because practically all trades are not in position to take further commitments. This condition is expected to continue for a couple of weeks more when inquiry may appear for next spring's requirements. The general mill situation is excellent as to unfilled orders, and it probably will be some time in December before the average mill must take on additional business.

TIRE FABRICS. American cotton grades have advanced 1¢ a pound on nearly all constructions; exceptions are noted in each group of fabrics where the prices remain unchanged or in one or 2 instances reduced 1¢.

Rims Approved by The Tire & Rim Association, Inc.

Rim Sizes	9 Mos., 1933 No.	%	9 Mos., 1932 No.	%
Drop Center				
16x3.62	.....	...	20	0.0
17x3.00	635,593	9.0	112,687	2.4
17x3.25	1,226,282	17.4	152,450	3.2
17x3.62	1,196,202	17.0	334,231	7.0
17x4.00	216,235	3.1	10,341	0.2
17x4.19	29,931	0.4	57,692	1.2
18x2.15	22,858	0.3	18,348	0.4
18x3.00	749,893	10.6	1,488,187	31.3
18x3.25	121,631	1.7	1,146,628	24.1
18x3.62	1,697	0.0	67,571	1.4
18x4.00	2,445	0.0	68,478	1.4
18x4.19	16,129	0.2	37,738	0.8
19x2.15	6,671	0.1	7,675	0.2
19x2.75	3,442	0.1	.....	...
19x3.00	42,932	0.6	53,030	1.1
19x3.25	.....	...	3,010	0.1
19x3.62	11	0.0	.....	...
20x2.75	.....	...	123	0.0
20x3.25	747	0.0	.....	...
21x2.75	484	0.0	.....	...
21x3.25	22	0.0	.....	...
Low Pressure				
13x5.50	.....	...	2,275	...
14x5.50	.....	...	51	...
15x4.00	.....	...	101	...
15x5.00	35,499	0.5	12,714	...
15x5.50	25,323	0.4	59,117	...
15x6.00	.....	...	247	...
16x3.50	189	0.0	22	...
16x4.00	847,230	12.0	335	...
16x4.50	98,637	1.4	46,026	...
16x5.00	968	0.0	1,263	...
16x5.50	187	0.0	2,192	...
16x6.00	621	0.0	217	...
16x4.50E	75,292	1.1	.....	...
16x5.00F	398	0.0	.....	...
16x5.50F	374	0.0	.....	...
Flat Base				
17x4	2,011	0.0	10,490	0.2
17x4½	50	0.0	8,636	0.2
17x5	6,302	0.1	2,727	0.1
18x3½	.....	...	276	0.0
18x3.25	243	0.0	1,193	0.0
18x4	3,715	0.1	18,903	0.4
18x4½	460	0.0	358	0.0
18x5	6,465	0.1	4,561	0.1
19x2.75	5,840	0.1	8,118	0.2
19x3.00	988	0.0	648	0.0
19x3.25	717	0.0	.....	...
19x3½	.....	...	106	0.0
19x4	13,531	0.3	16,736	0.4
19x4½	2,328	0.0	6,348	0.1
19x5	1,606	0.0	2,003	0.0
19x6	51	0.0	.....	...
20x2.75	11,535	0.2	7,610	0.2
20x3½	1,942	0.0	16,065	0.3
20x4	3,678	0.1	7,747	0.2
20x4½	3,924	0.1	6,569	0.1
20x5	6,733	0.1	11,086	0.2
20x6	.....	...	3,105	0.1
21x2.75	2,437	0.0	1,074	0.0
21x3½	5,798	0.1	12,539	0.3
21x4	1,961	0.0	6,248	0.1
21x4½	5,894	0.1	5,983	0.1
21x5	205	0.0	157	0.0
21x6	338	0.0	727	0.0
High Pressure				
30x3½	2,118	0.0	841	0.0
32x4	201	0.0	922	0.0
32x4½	806	0.0	.....	...
34x4½	418	0.0	358	0.0
Semi-Drop Base				
17x3.62	.....	...	14,886	0.3
19x3.00	.....	...	10,468	0.2
18" Truck				
18x5	284	0.0	5,270	0.1
18x7	5,027	0.1	3,995	0.1
18x8	484	0.0	289	0.0
20" Truck				
20x5	1,132,013	16.0	736,500	15.5
20x6	248,843	3.5	117,103	2.5
20x7	103,795	1.5	52,567	1.1
20x8	50,564	0.7	38,823	0.8
20x9/10	4,792	0.1	4,332	0.1
20x10.50	202	0.0	242	0.0
20x11	432	0.0	560	0.0
22" Truck				
22x7	1,869	0.0	349	0.0
22x8	9,597	0.1	4,393	0.1
22x9/10	2,129	0.0	4,105	0.1
24" Truck				
24x6	3,583	0.1	2,013	0.0
24x7	6,366	0.1	4,837	0.1
24x8	15,918	0.2	18,057	0.4
24x9/10	7,346	0.1	5,626	0.1
24x11	168	0.0	400	0.0
Tractor Rims				
24x6.00	132	0.0	.....	...
24x8.00	4,162	0.1	.....	...
28x8.00	1,462	0.0	.....	...
36x6.00	1,579	0.0	.....	...
Motorcycle				
24x3	593	0.0	1,146	0.0
Clincher				
30x3½	6,181	0.1	6,829	0.1
Airplane				
All sizes	9	...	.....	...
Totals	7,057,748	...	4,877,693	...

Tire Production Statistics

	Inventory	Production	Total Shipments
Pneumatic Casings—All Types			
1931	6,219,776	38,992,220	40,048,552
1932	6,115,487	32,067,732	32,200,820
1933			
Jan.	5,789,476	1,806,277	2,077,268
Feb.	5,901,557	1,871,498	1,833,970
Mar.	5,831,981	1,630,319	1,673,502
Apr.	5,418,979	2,498,795	2,923,154
May	5,408,132	4,151,433	4,144,138
June	5,291,952	4,879,939	5,044,363
July	5,475,205	4,570,901	4,397,753
Aug.	5,655,659	3,994,887	3,765,668
Solid and Cushion Tires			
1931	38,815	136,261	167,555
1932	23,830	97,089	108,581
1933			
Jan.	21,956	5,536	6,868
Feb.	.....	6,829	7,920
Mar.	.....	6,795	6,622
Apr.	.....	7,149	7,766
May	.....	9,229	9,256
June	.....	14,843	14,888
July	.....	14,956	13,606
Aug.	.....	16,375	13,450
Inner Tubes—All Types			
1931	6,337,570	38,666,376	40,017,175
1932	5,399,551	29,513,246	30,328,536
1933			
Jan.	4,957,298	1,674,557	2,028,100
Feb.	5,085,321	1,778,818	1,681,853
Mar.	5,095,340	1,506,141	1,521,736
Apr.	4,951,399	2,282,298	2,440,555
May	5,105,389	3,760,121	3,570,700
June	4,877,686	4,358,325	4,622,473
July	5,152,187	4,482,077	4,168,919
Aug.	5,302,736	3,933,134	3,749,898

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires		Consumption of Motor Gasoline (100%)
	Cotton Fabric Pounds	Crude Rubber Pounds	Gallons
1931	151,143,715	456,615,428	16,941,750,000
1932	128,981,222	416,577,533	15,698,340,000
1933			
Jan.	7,899,233	27,368,276	1,110,564,000
Feb.	7,263,337	25,123,700	979,608,000
Mar.	6,364,276	21,508,416	1,186,122,000
Apr.	10,460,327	35,169,724	1,267,392,000
May	16,778,354	58,202,264	1,427,958,000
June	19,552,783	67,866,087	1,583,820,000
July	18,709,458	64,936,169	1,447,236,000
Aug.	16,820,552	57,022,618	1,571,892,000

Rubber Manufacturers Association, Inc., figures representing approximately 80% of the industry with the exception of gasoline consumption.

Statement of "India Rubber World"

Statement of the ownership, management, circulation, etc., required by the Act of March 3, 1933, of INDIA RUBBER WORLD, published monthly at New York, N. Y., for October 1, 1933.

State of New York }
County of New York } ss.

Before me, a Notary Public in and for the state and county aforesaid, personally appeared William M. Morse, who, having been duly sworn according to law, deposes and says that he is the Editor of INDIA RUBBER WORLD, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: publisher, Bill Bros. Publishing Corp., 420 Lexington Ave., New York, N. Y.; editor, William M. Morse, 420 Lexington Ave., New York, N. Y.; managing editor, William M. Morse, 420 Lexington Ave., New York, N. Y.; business manager, B. Brittain Wilson, 420 Lexington Ave., New York, N. Y.

2. That the owner is: Bill Bros. Publishing Corp., Caroline L. Bill, Raymond Bill, Edward Lyman Bill, Randolph Brown, J. B. Spillane, all located at 420 Lexington Ave., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1% or more of total amount of bonds, mortgages, or other securities are: None.

4. That the 2 paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said 2 paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

WILLIAM M. MORSE, Editor.

Sworn to and subscribed before me this 28th day of September, 1933.

[SEAL] WM. A. LOW.

Notary Public N. Y. Co. No. 573. Reg. No. 5L334. Certificate filed in Queens Co. No. 1091. (My commission expires March 30, 1935.)

United States Latex Imports

1931	Pounds	Value
Jan.	651,859	$70,708
Feb.	825,401	89,470
Mar.	883,783	75,285
Apr.	833,105	73,867
May	712,404	82,202
June	1,581,394	129,496
July	1,304,839	104,868
Aug.	816,010	60,358
Sept.	982,992	72,443
Oct.	598,575	43,238
Nov.	593,624	40,649
Dec.	630,726	41,771
1932		
Jan.	742,135	$40,613
Feb.	983,186	52,182
Mar.	875,969	44,585
Apr.	1,233,497	46,397
May	314,941	27,449
June	691,155	28,800
July	488,483	37,327
Aug.	1,208,575	59,178
Sept.	727,125	46,380
Oct.	1,592,028	69,053
Nov.	1,177,747	70,785
Dec.	1,415,453	79,250
1933		
Jan.	1,882,928	$100,900
Feb.	821,035	46,037
Mar.	1,207,608	55,731
Apr.	1,778,323	80,749
May	1,644,296	71,008
June	1,353,703	66,827
July	1,383,459	85,636
Aug.	2,589,838	196,138

Data from United States Department of Commerce. Washington, D. C.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

MILL AND CALENDER ROOM FOREMAN, WITH YEARS OF experience in all phases of production. Excellent handler of manpower and cost. A-1 references. Address Box No. 288, care of INDIA RUBBER WORLD.

WOULD LIKE MANAGEMENT OR SUPERINTENDENCY OF MEchanical plant for the purpose of putting it on a paying basis. Can produce results. Address Box No. 289, care of INDIA RUBBER WORLD.

SALESMAN, MECHANICAL RUBBER GOODS, TIRES, AND ACcessories. 15 years' experience. Well acquainted with jobbing, industrial, and national accounts, particularly New York Metropolitan area. Best of references. Address Box No. 291, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: THOROUGHLY EXPERIENCED PRODUCTION MAN for manufacture of latex prophylactics. Must know compounding and processing. Exceptional opportunity for right party. Philadelphia Latex Products Co., 1530 N. Howard St., Philadelphia, Pa.

SALESMEN FAMILIAR WITH THE RUBBER TRADE; ONE WHO can call on the treasurers and heads of the rubber concerns, to sell a service indispensable to their business. We can offer the opportunity to earn at least $5,200 the first year, with possibilities thereafter limited only by personal production and managerial ability. Give complete sales experience and accomplishments. Address Box No. 287, care of INDIA RUBBER WORLD.

WANTED: EXPERIENCED CONTACT MAN QUALIFIED TO establish production rubber band tubing in small plant. Must be capable; reasonable to start. Address Box No. 293, care of INDIA RUBBER WORLD.

(*Advertisements continued on page* 71)

United States Statistics

Imports of Crude and Manufactured Rubber

	July, 1933		Seven Months Ended July, 1933	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	99,961,035	$4,293,111	434,853,990	$14,695,799
Liquid latex	1,383,459	85,636	10,071,352	506,888
Jelutong or pontianak	1,429,877	79,049	6,637,437	371,813
Balata	532,950	76,141	2,531,386	1,625,061
Gutta percha	85,559	5,787	857,418	48,284
Slak, scrap, and reclaimed	1,240,225	13,074	3,275,487	23,227
Totals	104,633,105	$4,552,798	458,227,070	$17,271,072
Chicle, crude—*Free*	138,086	$44,299	2,096,306	$548,594
MANUFACTURED—*Dutiable*				
Rubber soled footwear with fabric uppers—*pairs*	75,823	$10,212	3,762,956	$563,530
Rubber toys	.....	19,944	.....	275,400
Druggists' sundries, n. e. s.	.....	1,591	.....	26,805
Combs, hard rubber—*number*	322,760	10,803	2,492,192	74,653
Golf balls—*number*	129,660	34,442	766,058	174,251
Tennis and other rubber balls—*number*	43,809	4,603	1,412,354	71,554
Tires—*number*	794	2,475	21,442	105,894
Other rubber manufactures	.....	33,094	.....	256,433
Totals	.....	$117,164	.....	$1,548,520

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	3,177,839	$219,945	20,647,353	$938,934
Balata	12,878	1,850	113,961	17,876
Guayule	.....	.....	5,700	684
Gutta percha, rubber substitutes, and scrap	.....	.....	7,389	1,266
Rubber manufactures	.....	154	.....	4,974
Totals	.....	$221,949	.....	$963,734

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	1,135,154	$43,111	4,196,912	$152,055
Scrap	4,176,877	64,785	26,543,744	351,036
Rubberized automobile cloth, *sq. yd.*	53,987	18,439	326,610	131,438
Other rubberized piece goods and hospital sheeting, *sq. yd.*	54,413	18,843	366,943	124,907
Footwear				
Boots—*pairs*	4,480	10,504	27,492	58,842
Shoes—*pairs*	4,971	2,943	69,389	29,373
Canvas shoes with rubber soles—*pairs*	16,074	9,491	153,133	87,223
Soles—*doz. prs.*	1,799	3,131	7,482	15,331
Heels—*doz. prs.*	25,729	13,567	181,859	95,254
Water bottles and fountain syringes—*number*	6,908	2,504	86,030	30,186
Gloves—*doz. prs.*	2,245	4,301	33,321	64,993
Other druggists' sundries	.....	17,273	.....	158,393
Balloons—*gross*	10,791	9,179	103,864	89,854
Toys and balls	.....	5,889	.....	19,102
Bathing caps—*doz.*	3,702	6,968	46,175	76,826
Bands	16,838	4,495	139,778	38,199
Erasers	17,787	10,055	164,944	90,984
Hard rubber goods				
Electrical goods	57,322	6,543	604,249	55,016
Other goods	.....	9,674	.....	69,234
Tires				
Truck and bus casings, *number*	17,596	255,007	86,413	1,335,191
Other automobile casings, *number*	81,431	525,984	434,420	2,870,998
Tubes, auto—*number*	69,398	67,571	317,722	317,877
Other casings and tubes, *number*	2,279	4,227	13,117	27,843
Solid tires for automobiles and motor trucks, *number*	776	16,000	3,844	98,764
Other solid tires	131,195	14,711	560,971	63,740
Tire sundries and repair materials	.....	31,002	.....	196,970
Rubber and friction tape	46,796	9,920	311,511	66,129
Belting	135,709	61,745	922,625	405,360
Hose	267,858	67,378	1,576,177	393,811
Packing	89,234	29,497	566,641	214,217
Thread	132,776	65,941	814,176	431,060
Other rubber manufactures	.....	90,554	.....	544,931
Totals	.....	*$1,501,232	.....	$8,705,137

Imports by Customs Districts

	August, 1933 *Crude Rubber		August, 1932 *Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	11,789,272	$629,783	3,395,640	$113,112
New York	76,720,994	4,258,655	54,451,962	1,503,451
Philadelphia	1,019,391	41,960	169,053	3,604
Maryland	6,874,321	344,551	9,063,230	221,494
New Orleans	67,243	2,648	291,200	5,211
Los Angeles	4,753,894	282,099	8,559,346	230,040
San Francisco	325,854	18,283	123,200	5,090
Oregon	.....	.....	11,200	570
Ohio	69,863	4,650	70,005	3,651
Colorado	114,240	5,218	.....	.....
Totals	101,726,072	$5,587,847	76,134,836	$2,086,223

*Crude rubber including latex dry rubber content.

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	June, 1933		Three Months Ended June, 1933	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude rubber, etc.	3,227,128	$204,073	8,288,147	$456,889
Gutta percha	550	763	2,055	2,815
Rubber, recovered	419,200	15,742	1,019,900	38,530
Rubber and gutta percha scrap	230,900	5,047	455,200	10,771
Balata	2,358	1,211	4,119	2,251
Rubber substitute	10,200	1,704	40,900	7,692
Totals	3,890,336	$228,540	9,810,321	$518,948
PARTLY MANUFACTURED				
Hard rubber sheets and rods	701	$463	5,684	$2,312
Hard rubber tubes	.....	307	.....	646
Rubber thread not covered	4,679	5,306	18,305	18,488
Totals	5,380	$6,076	23,989	$21,446
MANUFACTURED				
Belting	.....	$3,347	.....	$7,480
Hose	.....	4,419	.....	12,220
Packing	.....	2,306	.....	9,071
Boots and shoes—*pairs*	6,383	2,157	110,798	22,946
Clothing, including waterproofed	.....	446	.....	2,607
Raincoats—*number*	340	1,145	1,886	5,876
Gloves—*dozen pairs*	364	766	685	2,091
Hot water bottles	.....	1,326	.....	2,500
Tires, bicycle—*number*	308	331	6,399	2,794
Pneumatic—*number*	928	10,269	3,825	32,729
Inner tubes—*number*	101	194	354	965
Solid for automobiles and motor trucks—*number*	57	1,223	78	1,833
Other solid tires	.....	2,098	.....	2,963
Mats and matting	.....	3,953	.....	11,690
Cement	.....	3,756	.....	12,854
Golf balls—*dozen*	5,956	17,880	18,350	51,695
Heels—*pairs*	4,414	268	7,048	464
Other rubber manufactures	.....	46,775	.....	140,515
Totals	.....	$102,659	.....	$323,293
Totals, rubber imports	.....	$337,275	.....	$863,687

Exports of Domestic and Foreign Rubber Goods

	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Waste rubber	$1,775	.....	$4,558	.....
MANUFACTURED				
Belting	$17,319	.....	$44,071	.....
Canvas shoes with rubber soles	56,563	.....	153,105	.....
Boots and shoes	119,786	.....	303,125	.....
Clothing, including waterproofed	5,253	.....	14,332	.....
Heels	12,488	.....	55,528	.....
Hose	3,636	.....	10,912	.....
Soles	13,557	.....	60,283	.....
Tires, bicycle	51	.....	51	.....
Pneumatic	237,782	.....	652,638	.....
Inner tubes	17,137	.....	44,126	.....
Solid	.....	.....	.....	.....
Other rubber manufactures	53,505	$1,281	129,732	$3,015
Totals	$537,077	$1,281	$1,467,903	$3,015
Totals, rubber exports	$538,852	$1,281	$1,472,461	$3,015

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
1610	Estimate wanted on equipment for a plant producing 500 tires and tubes daily.
1611	Information wanted on manufacturing rubber heels.
1612	Manufacturer of rubber graining combs, rollers, etc., for the paint and wallpaper trade.
1613	Manufacturer of retreading machines.
1614	Manufacturer of overflow trimming machines.
1615	Manufacturer of surgeons' tape.
1616	Manufacturer of the "Princeton" accelerator.
1617	Supplier of colored wool flock.
1618	Manufacturer of dipping, bead rolling, and stripping machine for latex dipped goods.
1619	Information wanted on engraving rubber of 70 durometer softness.
1620	Manufacturer of Flexo-Lay printer's blanket.
1621	Manufacturer of Hydroresin and Hydrowax.
1622	Manufacturer of "Stygian" gas carbon black.
1623	Manufacturer of machine cutting letters for rubber keys on typewriters.
1624	Manufacturer of dry sifter for small quantities of rubber chemicals.
1625	Manufacturer of rubber force cups.
1626	Manufacturer of dental dam rubber.
1627	Manufacturer of shears for cutting asbestos and rubber gaskets.
1628	Manufacturer of machine for folding small hand-hole asbestos gaskets.

Classified Advertisements

Continued

BUSINESS OPPORTUNITIES

PROPHYLACTICS, BALLOONS, ETC., FROM LATEX SOLUTIONS. Complete information concerning the manufacture of these items is now available in one report. Formulae, method of preparation, sources of materials and equipment, etc., are all included. For further information write Box No. 292, care of INDIA RUBBER WORLD.

RUBBER MANUFACTURERS TAKE NOTICE! DO YOU WANT to add to your line a patented, universally used molded product of the 10 to 20¢ price that is far better than anything on the market? Address Box No. 294, care of INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: ONE ALLEN TUBER NO. 4, MOTOR DRIVEN; one 18 by 54" Birmingham 4-roll calender; one unused 18 by 30" heavy duty FARREL MILL, chain drive; complete line of W. & P. Mixers, Vacuum Shelf Driers, Calenders, Mills, Colloid Mills, Pebble Mills, Dough Mixers, Hydraulic Presses, Pumps, etc. Rebuilt, guaranteed. What machinery have you for sale? CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

FOR SALE: COMPLETE LABORATORY EQUIPMENT FOR liquid latex including Colloidal Mill, U. S. Jr. Production Model, capacity 60 gals. per hr., complete with motor and starter; Bausch & Lomb Microscope; Viscosimeter; Barnstead Water Still; Experimental Dipping Machine with Frigidaire Unit; Mixers; Scales, etc. All practically new. Address Box No. 290, care of INDIA RUBBER WORLD.

Rubber Goods Production Statistics

		1933	1932
TIRES AND TUBES		July	July
Pneumatic casings			
Production	thousands	4,571	2,893
Shipments, total	thousands	4,398	1,923
Domestic	thousands	4,324	1,845
Stocks, end of month	thousands	5,475	4,962
Solid and cushion tires			
Production	thousands	15	10
Shipments, total	thousands	14	7
Domestic	thousands	13	7
Stocks, end of month	thousands	21	25
Inner tubes			
Production	thousands	4,482	2,350
Shipments, total	thousands	4,169	1,728
Domestic	thousands	4,110	1,674
Stocks, end of month	thousands	5,152	4,780
Raw material consumed			
Fabrics	thous. of lbs.	18,709	11,707
MISCELLANEOUS PRODUCTS			
Rubber bands, shipments	thous. of lbs.	307	160
Rubber clothing, calendered			
Orders, net	no. of coats and sundries	....	9,109
Production	no. of coats and sundries	....	26,849
Rubber-proofed fabrics, production, total	thous. of yds.	5,992	2,013
Auto fabrics	thous. of yds.	584	224
Raincoat fabrics	thous. of yds.	3,301	1,003
Rubber flooring, shipments	thous. of sq. ft.	255	329
Rubber and canvas footwear			
Production, total	thous. of prs.	3,824	2,321
Tennis	thous. of prs.	1,496	1,197
Waterproof	thous. of prs.	2,327	1,124
Shipments, total	thous. of prs.	4,333	2,985
Tennis	thous. of prs.	2,251	1,778
Waterproof	thous. of prs.	2,082	1,206
Shipments, domestic, total	thous. of prs.	4,253	2,942
Tennis	thous. of prs.	2,181	1,755
Waterproof	thous. of prs.	2,072	1,187
Stocks, total, end of month	thous. of prs.	13,517	17,317
Tennis	thous. of prs.	3,832	4,641
Waterproof	thous. of prs.	9,685	12,676
Rubber heels			
Production	thous. of prs.	21,496	9,868
Shipments, total	thous. of prs.	20,116	10,141
Export	thous. of prs.	293	261
Repair trade	thous. of prs.	6,184	2,449
Shoe manufacturers	thous. of prs.	13,638	7,432
Stocks, end of month	thous. of prs.	19,861	27,397
Rubber soles			
Production	thous. of prs.	5,154	2,419
Shipments, total	thous. of prs.	5,024	2,407
Export	thous. of prs.	4	14
Repair trade	thous. of prs.	436	113
Shoe manufacturers	thous. of prs.	4,584	2,280
Stocks, end of month	thous. of prs.	2,333	2,308
Mechanical rubber goods, shipments			
Total	thous. of dollars	4,191	2,024
Belting	thous. of dollars	1,187	524
Hose	thous. of dollars	1,428	734
Other	thous. of dollars	1,575	766

Source: *Survey of Current Business*, Bureau of Foreign & Domestic Commerce, Washington, D. C.

Low and High New York Spot Prices

All Prices in Cents per Pound

	October		
PLANTATIONS	1933*	1932	1931
Thin latex crepe	7¾/8⅞	3⅞/4¼	4⅞/5 9/16
Smoked sheet, ribbed	6⅞/8	3 5/16/3 11/16	4½/5 9/16
PARAS			
Upriver fine	8¼/9¼	7¼/7¾	6

*Figured to October 25, 1933.

London Stocks, August, 1933

	Landed Tons	Delivered Tons	Stocks, August 31 1933 Tons	1932 Tons	1931 Tons
LONDON					
Plantation	2,969	4,667	39,434	47,010	81,474
Other grades	....	....	46	69	54
LIVERPOOL					
Plantation	*2,166	*3,704	*57,143	*57,236	*55,428
Total tons, London and Liverpool	5,135	8,371	96,623	104,315	136,956

*Official returns from the recognized public warehouses.

World Rubber Shipments—Net Exports

	Long Tons—1933				
British Malaya	May	June	July	Aug.	Sept.
Gross exports	42,902	41,411	50,531	52,266	49,607
Imports	13,664	16,538	18,772	17,869	15,146
Net	29,238	24,873	31,759	34,397	34,461
Ceylon	4,643	5,198	4,201	5,839	*5,731
India and Burma	475	377	271	246	...
Sarawak	1,091	1,149	1,358	955	1,027
British N. Borneo	*400	*400	*400	*400	*400
Siam	359	632	797	926	611
Java and Madura	6,782	7,352	7,367	6,460	...
Sumatra E. Coast	7,298	6,654	8,580	7,985	...
Other N. E. Indies	13,195	14,779	16,534	15,161	...
French Indo-China	*1,436	*1,126	*1,361	*1,325	*1,159
Amazon Valley	918	704	913	...	...
Africa	*100	*100	*100	*100	*100
Totals	65,935	63,344	73,641	....	...

* Estimate. *Compiled by Rubber Division, Washington, D. C.*

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
§5,774	Footwear	Oslo, Norway
§5.795	Druggists' sundries	Toronto, Canada
§5.807	Druggists' sundries	Montreal, Canada
*5,820	Rubber thread	Malmo, Sweden
*5,830	Cloth-lined rubber transmission belting	Strasbourg, France
*5,831	Football bladders	Geneva, Switzerland
*5,870	Wire insulating machinery	San Luis Potosi, Mexico
§5,887	Dental rubber products, etc.	Cadiz, Spain
§5,900	Hose	Amsterdam, Netherlands
*5,913	Druggists' sundries	Tarija, Bolivia
*5,933	Face sponges	Montreal, Canada
*5,954	Elastic webbing	Mexico, Mexico
§5,975	Balloons	Buenos Aires, Argentina
*6,038	Zinc oxide for rubber industry, etc.	Liverpool, England
§6,062	Rubber sheeting for tables	Mexico, Mexico
§6,069	Tires and tubes	Port au Prince, Haiti
§6,072	Mechanical goods	Belgrade, Yugoslavia
§6,075	Tire making machinery	Berlin, Germany
§6,091	Bicycle tires and raincoats	Oslo, Norway
§6,112	Insulated electric cable	Sydney, Australia
§6,148	Tennis balls	Johannesburg, South Africa
†6,164	Mechanical goods	Rio de Janeiro, Brazil
†6,165	Conveyer belts	Haarlem, Netherlands
‡6,177	Old tires	Swatow, China
‡6,191	Belting	Lahore, India
†6,192	Bathing shoes	Caracas, Venezuela
*6,194	Transmission belts	Cochabamba, Bolivia

*Purchase. †Agency. ‡Purchase and agency. §Purchase or agency.

Plantation Rubber Crop Returns by Months

	Borneo (26 Companies)		Ceylon (102 Companies)		India and Burma (21 Companies)		Malaya (338 Companies)		Netherlands East Indies: Java (60 Companies)		Netherlands East Indies: Sumatra (60 Companies)		Miscellaneous (8 Companies)		Total (615 Companies)	
1933	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
January	360	73.6	1,124	55.1	120	21.4	12,457	100.2	2,556	97.3	3,837	95.2	124	68.5	20,578	92.0
February	323	66.1	905	44.3	46	8.2	11,628	93.5	2,698	102.7	4,207	104.3	54	29.8	19,861	88.8
March	319	65.2	992	48.6	126	22.4	10,505	84.5	2,752	104.8	4,143	102.8	93	51.4	18,930	84.6
April	304	62.2	1,242	60.9	139	24.7	10,523	84.6	2,841	108.2	3,824	94.8	121	66.9	18,994	84.9
May	333	68.1	873	42.8	117	20.8	11,699	94.1	2,990	113.9	4,138	102.6	134	74.0	20,284	90.7
June	334	68.3	1,002	49.1	31	5.5	12,389	99.6	2,960	112.7	4,211	104.4	140	77.3	21,067	94.2
July	354	72.4	1,245	61.0	29	5.2	12,508	100.6	2,903	110.5	4,531	112.4	133	73.5	21,703	97.0
August	348	71.2	1,320	64.7	39	6.9	12,794	102.9	2,450	93.3	4,436	110.0	131	72.4	21,518	96.2
8 months ending August,																
1933	2,675	...	8,703	...	647	...	94,503	...	22,150	...	33,327	...	930	...	162.935	...
1932	2,561	...	8,780	...	772	...	100,470	...	19,340	...	33,711	...	1,250	...	166,884	...

NOTE: Index figures throughout are based on the monthly average for 1929=100. Issued September 26, 1933, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.